```
atg aca tcg ccc cag cta gag tgg act ctg cag acc ctt ctg gag cag          48
Met Thr Ser Pro Gln Leu Glu Trp Thr Leu Gln Thr Leu Leu Glu Gln
 1               5                   10                  15

ctg aac gag gat gaa tta aag agt ttc aaa tcc ctt tta tgg gct ttt          96
Leu Asn Glu Asp Glu Leu Lys Ser Phe Lys Ser Leu Leu Trp Ala Phe
                20                  25                  30

ccc ctc gaa gac gtg cta cag aag acc cca tgg tct gag gtg gaa gag         144
Pro Leu Glu Asp Val Leu Gln Lys Thr Pro Trp Ser Glu Val Glu Glu
                35                  40                  45

gct gat ggc aag aaa ctg gca gaa att ctg gtc aac acc tcc tca gaa         192
Ala Asp Gly Lys Lys Leu Ala Glu Ile Leu Val Asn Thr Ser Ser Glu
        50                  55                  60

aat tgg ata agg aat gcg act gtg aac atc ttg gaa gag atg aat ctc         240
Asn Trp Ile Arg Asn Ala Thr Val Asn Ile Leu Glu Glu Met Asn Leu
65                  70                  75                  80

acg gaa ttg tgt aag atg gca aag gct gag atg atg gag gac gga cag         288
Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln
                85                  90                  95

gtg caa gaa ata gat aat cct gag ctg gga gat gca gaa gaa gac tcg         336
Val Gln Glu Ile Asp Asn Pro Glu Leu Gly Asp Ala Glu Glu Asp Ser
                100                 105                 110

gag tta gca aag cca ggt gaa aag gaa gga tgg aga aat tca atg gag         384
Glu Leu Ala Lys Pro Gly Glu Lys Glu Gly Trp Arg Asn Ser Met Glu
            115                 120                 125

aaa caa tct ttg gtc tgg aag aac acc ttt tgg caa gga gac att gac         432
Lys Gln Ser Leu Val Trp Lys Asn Thr Phe Trp Gln Gly Asp Ile Asp
        130                 135                 140

aat ttc cat gac gac gtc act ctg aga aac caa cgg ttc att cca ttc         480
Asn Phe His Asp Asp Val Thr Leu Arg Asn Gln Arg Phe Ile Pro Phe
145                 150                 155                 160

ttg aat ccc aga aca ccc agg aag cta aca cct tac acg gtg gtg ctg         528
Leu Asn Pro Arg Thr Pro Arg Lys Leu Thr Pro Tyr Thr Val Val Leu
                165                 170                 175

cac ggc ccc gca ggc gtg ggg aaa acc acg ctg gcc aaa aag tgt atg         576
His Gly Pro Ala Gly Val Gly Lys Thr Thr Leu Ala Lys Lys Cys Met
                180                 185                 190

ctg gac tgg aca gac tgc aac ctc agc ccg acg ctc aga tac gcg ttc         624
Leu Asp Trp Thr Asp Cys Asn Leu Ser Pro Thr Leu Arg Tyr Ala Phe
            195                 200                 205
```

FIG. 1A

```
tac ctc agc tgc aag gag ctc agc cgc atg ggc ccc tgc agt ttt gca          672
Tyr Leu Ser Cys Lys Glu Leu Ser Arg Met Gly Pro Cys Ser Phe Ala
    210             215             220

gag ctg atc tcc aaa gac tgg cct gaa ttg cag gat gac att cca agc          720
Glu Leu Ile Ser Lys Asp Trp Pro Glu Leu Gln Asp Asp Ile Pro Ser
225             230             235             240

atc cta gcc caa gca cag aga atc ctg ttc gtg gtc gat ggc ctt gat          768
Ile Leu Ala Gln Ala Gln Arg Ile Leu Phe Val Val Asp Gly Leu Asp
                245             250             255

gag ctg aaa gtc cca cct ggg gcg ctg atc cag gac atc tgc ggg gac          816
Glu Leu Lys Val Pro Pro Gly Ala Leu Ile Gln Asp Ile Cys Gly Asp
                260             265             270

tgg gag aag aag aag ccg gtg ccc gtc ctc ctg ggg agt ttg ctg aag          864
Trp Glu Lys Lys Lys Pro Val Pro Val Leu Leu Gly Ser Leu Leu Lys
            275             280             285

agg aag atg tta ccc agg gca gcc ttg ctg gtc acc acg cgg ccc agg          912
Arg Lys Met Leu Pro Arg Ala Ala Leu Leu Val Thr Thr Arg Pro Arg
        290             295             300

gca ctg agg gac ctc cag ctc ctg gcg cag cag ccg atc tac ata agg          960
Ala Leu Arg Asp Leu Gln Leu Leu Ala Gln Gln Pro Ile Tyr Ile Arg
305             310             315             320

gtg gag ggc ttc ctg gag gag gac agg agg gcc tat ttc ctg aga cac         1008
Val Glu Gly Phe Leu Glu Glu Asp Arg Arg Ala Tyr Phe Leu Arg His
                325             330             335

ttt gga gac gag gac caa gcc atg cgt gcc ttt gag cta atg agg agc         1056
Phe Gly Asp Glu Asp Gln Ala Met Arg Ala Phe Glu Leu Met Arg Ser
            340             345             350

aac gcg gcc ctg ttc cag ctg ggc tcg gcc ccc gcg gtg tgc tgg att        1104
Asn Ala Ala Leu Phe Gln Leu Gly Ser Ala Pro Ala Val Cys Trp Ile
        355             360             365

gtg tgc acg act ctg aag ctg cag atg gag aag ggg gag gac ccg ccg        1152
Val Cys Thr Thr Leu Lys Leu Gln Met Glu Lys Gly Glu Asp Pro Pro
    370             375             380

gtt ccc gca ggg cgc aca gct gcg ggg cgc gct gcg gac gct gag cct        1200
Val Pro Ala Gly Arg Thr Ala Ala Gly Arg Ala Ala Asp Ala Glu Pro
385             390             395             400

cct ggc cgc gca ggg ctg tgg gcg cag atg tcc gtg ttc cac cga gag        1248
Pro Gly Arg Ala Gly Leu Trp Ala Gln Met Ser Val Phe His Arg Glu
            405             410             415
```

FIG. 1B

```
gac ctg gaa agg ctc ggg gtg cag gag tcc gac ctc cgt ctg ttc ctg     1296
Asp Leu Glu Arg Leu Gly Val Gln Glu Ser Asp Leu Arg Leu Phe Leu
            420                 425                 430

gac gga gac atc ctc cgc cag gac aga gtc tcc aaa ggc tgc tac tcc     1344
Asp Gly Asp Ile Leu Arg Gln Asp Arg Val Ser Lys Gly Cys Tyr Ser
            435                 440                 445

ttc atc cac ctc agc ttc cag cag ttt ctc act gcc ctg ttc tac gcc     1392
Phe Ile His Leu Ser Phe Gln Gln Phe Leu Thr Ala Leu Phe Tyr Ala
            450                 455                 460

ctg gag aag gag gag gag gag gac agg gac ggc cac gcc tgg gac att     1440
Leu Glu Lys Glu Glu Glu Glu Asp Arg Asp Gly His Ala Trp Asp Ile
465                 470                 475                 480

ggg gac gta cag aag ctg ctt tcc gga gaa gaa aga ctc aag aac ccc     1488
Gly Asp Val Gln Lys Leu Leu Ser Gly Glu Glu Arg Leu Lys Asn Pro
                485                 490                 495

gac ctg att caa gta gga cac ttc tta ttc ggc ctc gct aac gag aag     1536
Asp Leu Ile Gln Val Gly His Phe Leu Phe Gly Leu Ala Asn Glu Lys
                500                 505                 510

aga gcc aag gag ttg gag gcc act ttt ggc tgc cgg atg tca ccg gac     1584
Arg Ala Lys Glu Leu Glu Ala Thr Phe Gly Cys Arg Met Ser Pro Asp
            515                 520                 525

atc aaa cag gaa ttg ctg caa tgc aaa gca cat ctt cat gca aat aag     1632
Ile Lys Gln Glu Leu Leu Gln Cys Lys Ala His Leu His Ala Asn Lys
            530                 535                 540

ccc tta tcc gtg acc gac ctg aag gag gtc ttg ggc tgc ctg tat gag     1680
Pro Leu Ser Val Thr Asp Leu Lys Glu Val Leu Gly Cys Leu Tyr Glu
545                 550                 555                 560

tct cag gag gag gag ctg gcg aag gtg gtg gtg gcc ccg ttc aag gaa     1728
Ser Gln Glu Glu Glu Leu Ala Lys Val Val Val Ala Pro Phe Lys Glu
                565                 570                 575

att tct att cac ctg aca aat act tct gaa gtg atg cat tgt tcc ttc     1776
Ile Ser Ile His Leu Thr Asn Thr Ser Glu Val Met His Cys Ser Phe
                580                 585                 590

agc ctg aag cat tgt caa gac ttg cag aaa ctc tca ctg cag gta gca     1824
Ser Leu Lys His Cys Gln Asp Leu Gln Lys Leu Ser Leu Gln Val Ala
            595                 600                 605

aag ggg gtg ttc ctg gag aat tac atg gat ttt gaa ctg gac att gaa     1872
Lys Gly Val Phe Leu Glu Asn Tyr Met Asp Phe Glu Leu Asp Ile Glu
            610                 615                 620
```
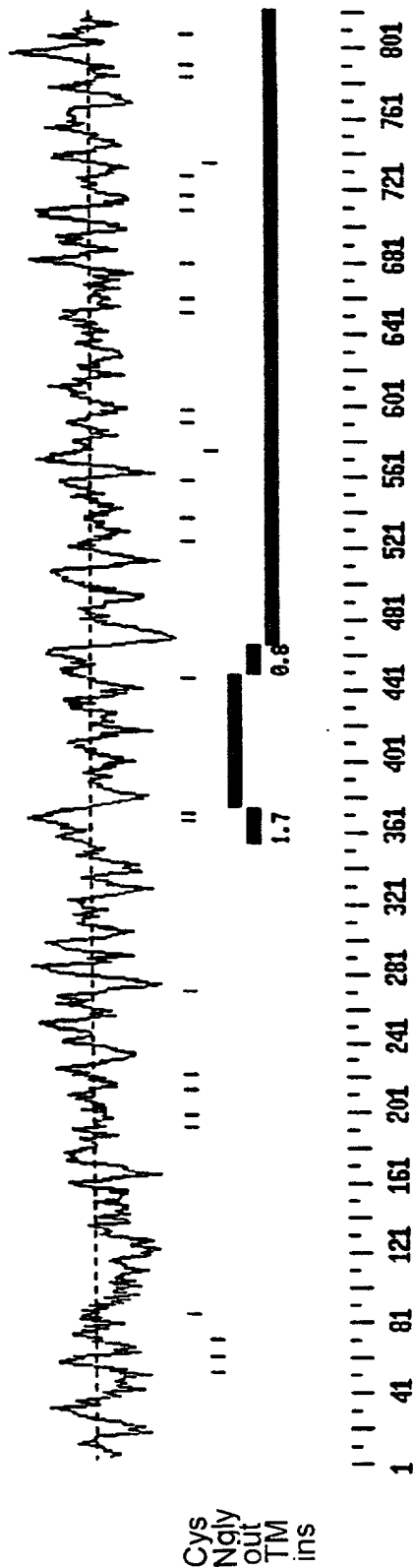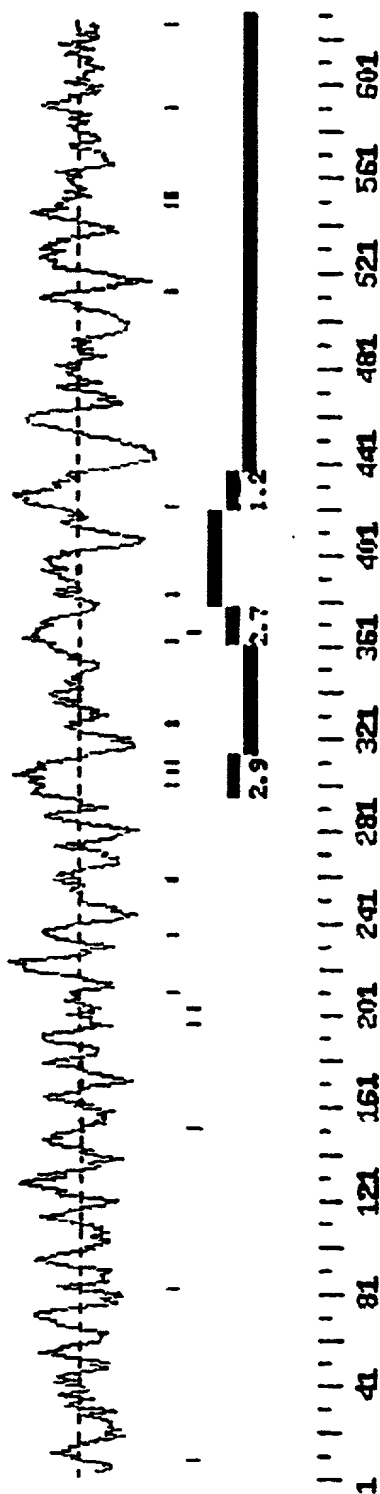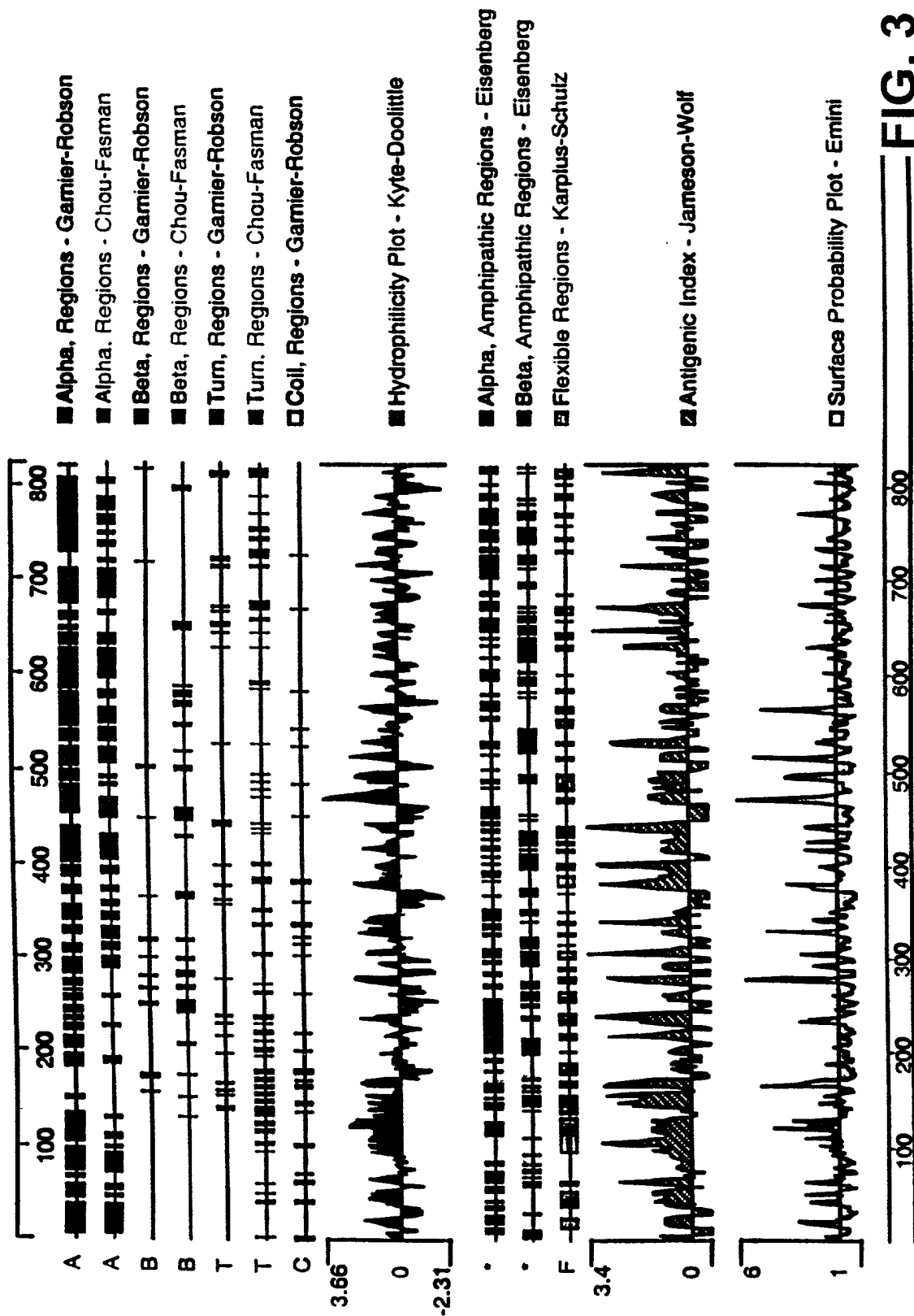
FIG. 1C

```
ttt gaa agc tca aac agc aac ctc aag ttt ctg gaa gtg aaa caa agc      1920
Phe Glu Ser Ser Asn Ser Asn Leu Lys Phe Leu Glu Val Lys Gln Ser
625                 630             635                 640

ttc ctg agt gac tct tct gtg cgg att ctt tgt gac cac gta acc cgt      1968
Phe Leu Ser Asp Ser Ser Val Arg Ile Leu Cys Asp His Val Thr Arg
                645             650                 655

agc acc tgt cat ctg cag aaa gtg gag att aaa aac gtc acc cct gac      2016
Ser Thr Cys His Leu Gln Lys Val Glu Ile Lys Asn Val Thr Pro Asp
            660             665                 670

acc gcg tac cgg gac ttc tgt ctt gct ttc att ggg aag aag acc ctc      2064
Thr Ala Tyr Arg Asp Phe Cys Leu Ala Phe Ile Gly Lys Lys Thr Leu
            675             680             685

acg cac ctg acc ctg gca ggg cac atc gag tgg gaa cgc acg atg atg      2112
Thr His Leu Thr Leu Ala Gly His Ile Glu Trp Glu Arg Thr Met Met
        690             695             700

ctg atg ctg tgt gac ctg ctc aga aat cat aaa tgc aac ctg cag tac      2160
Leu Met Leu Cys Asp Leu Leu Arg Asn His Lys Cys Asn Leu Gln Tyr
705                 710             715                 720

ctg agg ttg gga ggt cac tgt gcc acc ccg gag cag tgg gct gaa ttc      2208
Leu Arg Leu Gly Gly His Cys Ala Thr Pro Glu Gln Trp Ala Glu Phe
                725             730                 735

ttc tat gtc ctc aaa gcc aac cag tcc ctg aag cac ctg cgt ctc tca      2256
Phe Tyr Val Leu Lys Ala Asn Gln Ser Leu Lys His Leu Arg Leu Ser
                740             745             750

gcc aat gtg ctc ctg gat gag ggt gcc atg ttg ctg tac aag acc atg      2304
Ala Asn Val Leu Leu Asp Glu Gly Ala Met Leu Leu Tyr Lys Thr Met
            755             760             765

aca cgc cca aaa cac ttc ctg cag atg ttg tcg ttg gaa aac tgt cgt      2352
Thr Arg Pro Lys His Phe Leu Gln Met Leu Ser Leu Glu Asn Cys Arg
        770             775             780

ctt aca gaa gcc agt tgc aag gac ctt gct gct gtc ttg gtt gtc agc      2400
Leu Thr Glu Ala Ser Cys Lys Asp Leu Ala Ala Val Leu Val Val Ser
785                 790             795                 800

aag aag ctg aca cac ctg tgc ttg gcc aag aac ccc att ggg gat aca      2448
Lys Lys Leu Thr His Leu Cys Leu Ala Lys Asn Pro Ile Gly Asp Thr
                805             810             815

ggg gtg aag ttt ctg t                                                 2464
Gly Val Lys Phe Leu
            820
```

FIG. 1D

FIG. 2

FIG. 6

FIG. 3

Legend:
- Alpha, Regions - Garnier-Robson
- Alpha, Regions - Chou-Fasman
- Beta, Regions - Garnier-Robson
- Beta, Regions - Chou-Fasman
- Turn, Regions - Garnier-Robson
- Turn, Regions - Chou-Fasman
- Coil, Regions - Garnier-Robson
- Hydrophilicity Plot - Kyte-Doolittle
- Alpha, Amphipathic Regions - Eisenberg
- Beta, Amphipathic Regions - Eisenberg
- Flexible Regions - Karplus-Schulz
- Antigenic Index - Jameson-Wolf
- Surface Probability Plot - Emini

NB-ARC: domain 1 of 1, from 176 to 190: score 11.4, E = 0.033
(SEQ ID NO: 9)   *->ivGMGGiGKTTLakq<-*
                  ++G++G+GKTTLak+
NBS-2   176   LHGPAGVGKTTLAKK   190

FIG. 4A

LRR_RI_2: domain 1 of 2, from 743 to 770: score 13.4, E = 0.57
(SEQ ID NO:10)   *->npsLreLdLsnNklgdeGaraLaeaLks<-*
                  n+sL+ L+Ls N l deGa+ L ++ +
NBS-2   743   NQSLKHLRLSANVLLDEGAMLLYKTMTR   770

FIG. 4B

LRR_RI_2: domain 2 of 2, from 772 to 799: score 18.2, E = 0.12
(SEQ ID NO:10)   *->npsLreLdLsnNklgdeGaraLaeaLks<-*
                  ++ L+ L+L+n+ l+++ ++ La++L
NBS-2   772   KHFLQMLSLENCRLTEASCKDLAAVLVV   799

FIG. 4C

LRR_RI_2: domain 1 of 1, from 596 to 623: score 11.0, E = 1.2
(SEQ ID NO:10)   *->npsLreLdLsnNklgdeGaraLaeaLks<-*
                  ++sLreL++ +N+l   r L++sL++
NBS-3   59G   NWSLRELHIFDNDLNGISERILSKALEH   623

FIG. 8

```
atg gca gaa tcg gat tct act gac ttt gac ctg ctg tgg tat cta gag       48
Met Ala Glu Ser Asp Ser Thr Asp Phe Asp Leu Leu Trp Tyr Leu Glu
 1               5                   10                  15

aat ctc agt gac aag gaa ttt cag agt ttt aag aag tat ctg gca cgc       96
Asn Leu Ser Asp Lys Glu Phe Gln Ser Phe Lys Lys Tyr Leu Ala Arg
                20                  25                  30

aag att ctt gat ttc aaa ctg cca cag ttt cca ctg ata cag atg aca      144
Lys Ile Leu Asp Phe Lys Leu Pro Gln Phe Pro Leu Ile Gln Met Thr
            35                  40                  45

aaa gaa gaa ctg gct aac gtg ttg cca atc tct tat gag gga cag tat      192
Lys Glu Glu Leu Ala Asn Val Leu Pro Ile Ser Tyr Glu Gly Gln Tyr
        50                  55                  60

ata tgg aat atg ctc ttc agc ata ttt tca atg atg cgt aag gaa gat      240
Ile Trp Asn Met Leu Phe Ser Ile Phe Ser Met Met Arg Lys Glu Asp
 65                  70                  75                  80

ctt tgt agg aag atc att ggc aga cga aac cat gtg ttc tac ata ctt      288
Leu Cys Arg Lys Ile Ile Gly Arg Arg Asn His Val Phe Tyr Ile Leu
                85                  90                  95

caa tta gcc tat gat tct acc agc tat tat tca gca aac aat ctc aat      336
Gln Leu Ala Tyr Asp Ser Thr Ser Tyr Tyr Ser Ala Asn Asn Leu Asn
                100                 105                 110

gtg ttc ctg atg gga gag aga gca tct gga aaa act att gtt ata aat      384
Val Phe Leu Met Gly Glu Arg Ala Ser Gly Lys Thr Ile Val Ile Asn
            115                 120                 125

ctg gct gtg ttg agg tgg atc aag ggt gag atg tgg cag aac atg atc      432
Leu Ala Val Leu Arg Trp Ile Lys Gly Glu Met Trp Gln Asn Met Ile
        130                 135                 140

tcg tac gtc gtt cac ctc act gct cac gaa ata aac cag atg acc aac      480
Ser Tyr Val Val His Leu Thr Ala His Glu Ile Asn Gln Met Thr Asn
145                 150                 155                 160

agc agc ttg gct gag cta atc gcc aag gac tgg cct gac ggc cag gct      528
Ser Ser Leu Ala Glu Leu Ile Ala Lys Asp Trp Pro Asp Gly Gln Ala
                165                 170                 175

ccc att gca gac atc ctg tct gat ccc aag aaa ctc ctt ttc atc ctc      576
Pro Ile Ala Asp Ile Leu Ser Asp Pro Lys Lys Leu Leu Phe Ile Leu
                180                 185                 190

gag gac ttg gac aac ata aga ttc gag tta aat gtc aat gaa agt gct      624
Glu Asp Leu Asp Asn Ile Arg Phe Glu Leu Asn Val Asn Glu Ser Ala
                195                 200                 205
```

FIG. 5A

```
ttg tgt agt aac agc acc cag aaa gtt ccc att cca gtt ctc ctg gtc        672
Leu Cys Ser Asn Ser Thr Gln Lys Val Pro Ile Pro Val Leu Leu Val
    210             215             220

agt ttg ctg aag aga aaa atg gct cca ggc tgc tgg ttc ctc atc tcc        720
Ser Leu Leu Lys Arg Lys Met Ala Pro Gly Cys Trp Phe Leu Ile Ser
225             230             235             240

tca agg ccc aca cgt ggg aat aat gta aaa acg ttc ttg aaa gag gta        768
Ser Arg Pro Thr Arg Gly Asn Asn Val Lys Thr Phe Leu Lys Glu Val
                245             250             255

gat tgc tgc acg acc ttg cag ctg tcg aat ggg aag agg gag ata tat       816
Asp Cys Cys Thr Thr Leu Gln Leu Ser Asn Gly Lys Arg Glu Ile Tyr
        260             265             270

ttt aac tct ttc ttt aaa gac cgc cag agg gcg tcg gca gcc ctc cag       864
Phe Asn Ser Phe Phe Lys Asp Arg Gln Arg Ala Ser Ala Ala Leu Gln
        275             280             285

ctt gta cat gag gat gaa ata ctc gtg ggt ctg tgc cga gtc gcc atc       912
Leu Val His Glu Asp Glu Ile Leu Val Gly Leu Cys Arg Val Ala Ile
    290             295             300

tta tgc tgg atc acg tgt act gtc ctg aag cgg cag atg gac aag ggg       960
Leu Cys Trp Ile Thr Cys Thr Val Leu Lys Arg Gln Met Asp Lys Gly
305             310             315             320

cgt gac ttc cag ctc tgc tgc caa aca ccc act gat cta cat gcc cac      1008
Arg Asp Phe Gln Leu Cys Cys Gln Thr Pro Thr Asp Leu His Ala His
                325             330             335

ttt ctt gct gat gcg ttg aca tca gag gct gga ctt act gcc aat cag      1056
Phe Leu Ala Asp Ala Leu Thr Ser Glu Ala Gly Leu Thr Ala Asn Gln
            340             345             350

tat cac cta ggt ctc cta aaa cgt ctg tgt ttg ctg gct gca gga gga      1104
Tyr His Leu Gly Leu Leu Lys Arg Leu Cys Leu Leu Ala Ala Gly Gly
        355             360             365

ctg ttt ctg agc acc ctg aat ttc agt ggt gaa gac ctc aga tgt gtt      1152
Leu Phe Leu Ser Thr Leu Asn Phe Ser Gly Glu Asp Leu Arg Cys Val
        370             375             380

ggg ttt act gag gct gat gtc tct gtg ttg cag gcc gcg aat att ctt      1200
Gly Phe Thr Glu Ala Asp Val Ser Val Leu Gln Ala Ala Asn Ile Leu
385             390             395             400

ttg ccg agc aac act cat aaa gac cgt tac aag ttc ata cac ttg aac      1248
Leu Pro Ser Asn Thr His Lys Asp Arg Tyr Lys Phe Ile His Leu Asn
            405             410             415
```

FIG. 5B

```
gtc cag gag ttt tgt aca gcc att gca ttt ctg atg gca gta ccc aac      1296
Val Gln Glu Phe Cys Thr Ala Ile Ala Phe Leu Met Ala Val Pro Asn
            420             425             430

tat ctg atc ccc tca ggc agc aga gag tat aaa gag aag aga gaa caa      1344
Tyr Leu Ile Pro Ser Gly Ser Arg Glu Tyr Lys Glu Lys Arg Glu Gln
            435             440             445

tac tct gac ttt aat caa gtg ttt act ttc att ttt ggt ctt cta aat      1392
Tyr Ser Asp Phe Asn Gln Val Phe Thr Phe Ile Phe Gly Leu Leu Asn
            450             455             460

gca aac agg aga aag att ctt gag aca tcc ttt gga tac cag cta ccg      1440
Ala Asn Arg Arg Lys Ile Leu Glu Thr Ser Phe Gly Tyr Gln Leu Pro
465             470             475             480

atg gta gac agc ttc aag tgg tac tcg gtg gga tac atg aaa cat ttg      1488
Met Val Asp Ser Phe Lys Trp Tyr Ser Val Gly Tyr Met Lys His Leu
            485             490             495

gac cgt gac ccg gaa aag ttg acg cac cat atg cct ttg ttt tac tgt      1536
Asp Arg Asp Pro Glu Lys Leu Thr His His Met Pro Leu Phe Tyr Cys
            500             505             510

ctc tat gag aat cgg gaa gaa gaa ttt gtg aag acg att gtg gat gct      1584
Leu Tyr Glu Asn Arg Glu Glu Glu Phe Val Lys Thr Ile Val Asp Ala
            515             520             525

ctc atg gag gtt aca gtt tac ctt caa tca gac aag gat atg atg gtc      1632
Leu Met Glu Val Thr Val Tyr Leu Gln Ser Asp Lys Asp Met Met Val
            530             535             540

tca tta tac tgt ctg gat tac tgc tgt cac ctg agg aca ctt aag ttg      1680
Ser Leu Tyr Cys Leu Asp Tyr Cys Cys His Leu Arg Thr Leu Lys Leu
545             550             555             560

agt gtt cag cgc atc ttt caa aac aaa gag cca ctt ata agg cca act      1728
Ser Val Gln Arg Ile Phe Gln Asn Lys Glu Pro Leu Ile Arg Pro Thr
            565             570             575

gct agt caa atg aag agc ctt gtc tac tgg aga gag atc tgc tct ctt      1776
Ala Ser Gln Met Lys Ser Leu Val Tyr Trp Arg Glu Ile Cys Ser Leu
            580             585             590

ttt tat aca atg gag agc ctc cgg gag ctg cat atc ttt gac aat gac      1824
Phe Tyr Thr Met Glu Ser Leu Arg Glu Leu His Ile Phe Asp Asn Asp
            595             600             605

ctt aat ggt att tca gaa agg att ctg tct aaa gcc ctg gag cat tct      1872
Leu Asn Gly Ile Ser Glu Arg Ile Leu Ser Lys Ala Leu Glu His Ser
            610             615             620
```

FIG. 5C

```
agc tgt aaa ctt cgc aca ctc aa                    1895
Ser Cys Lys Leu Arg Thr Leu
625                 630
```

FIG. 5D

FIG. 7

■ Alpha, Regions - Garnier-Robson
■ Alpha, Regions - Chou-Fasman
■ Beta, Regions - Garnier-Robson
■ Beta, Regions - Chou-Fasman
■ Turn, Regions - Garnier-Robson
■ Turn, Regions - Chou-Fasman
□ Coil, Regions - Garnier-Robson

■ Hydrophilicity Plot - Kyte-Doolittle

■ Alpha, Amphipathic Regions - Eisenberg
■ Beta, Amphipathic Regions - Eisenberg
■ Flexible Regions - Karplus-Schulz

☑ Antigenic Index - Jameson-Wolf

□ Surface Probability Plot - Emini
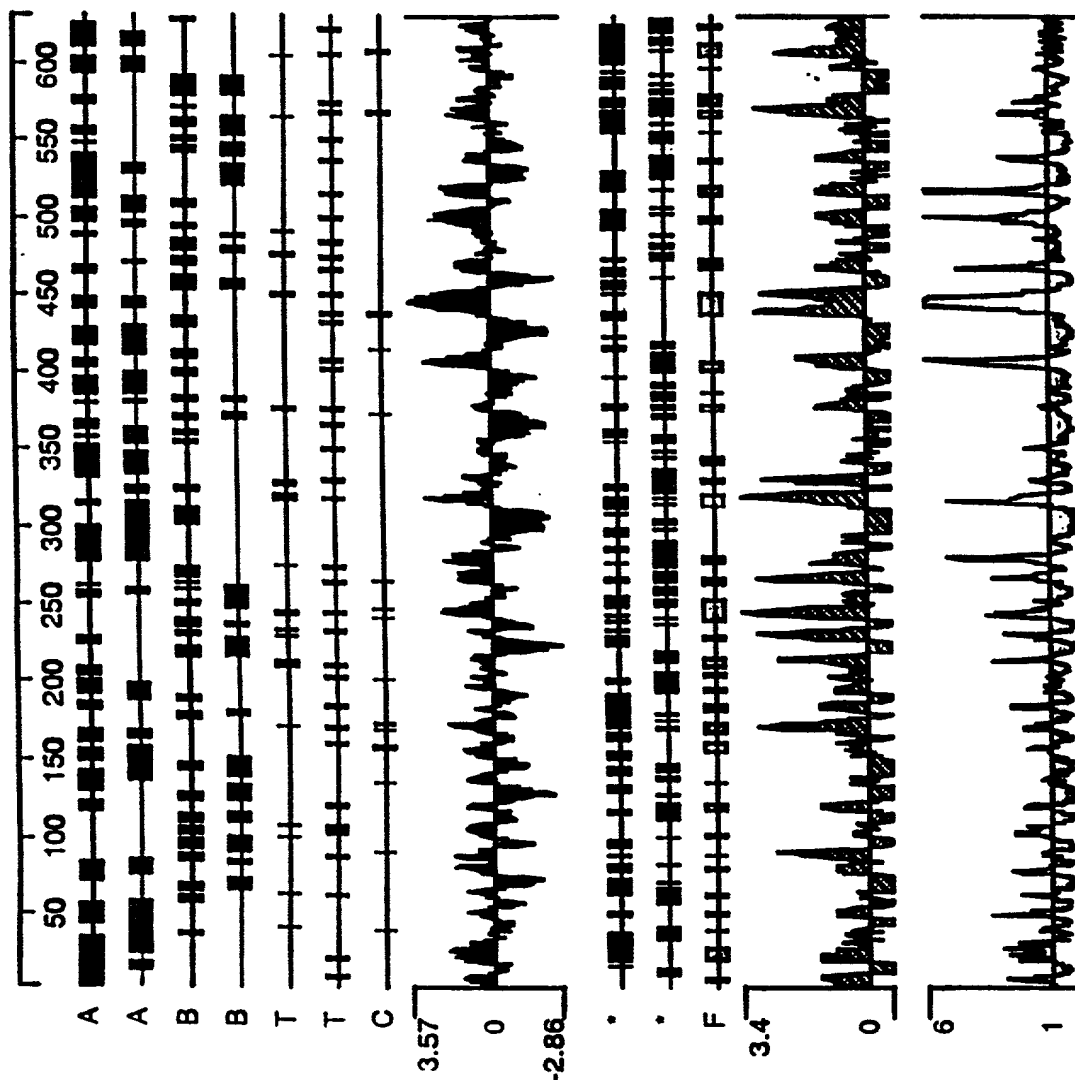
```
atg aag gct gaa cta ctg gag aca tgg gac aac atc agt tgg cct aaa        48
Met Lys Ala Glu Leu Leu Glu Thr Trp Asp Asn Ile Ser Trp Pro Lys
 1               5                  10                  15

gac cac gta tat atc cgt aat aca tca aag gac gaa cat gag gaa ctg        96
Asp His Val Tyr Ile Arg Asn Thr Ser Lys Asp Glu His Glu Glu Leu
                20                  25                  30

cag cgc cta ctg gat cct aat agg act aga gcc cag gcc cag acg ata       144
Gln Arg Leu Leu Asp Pro Asn Arg Thr Arg Ala Gln Ala Gln Thr Ile
            35                  40                  45

gtc ttg gtg ggg agg gca ggg gtt ggg aag acc acc ttg gca atg cag       192
Val Leu Val Gly Arg Ala Gly Val Gly Lys Thr Thr Leu Ala Met Gln
        50                  55                  60

gct atg ctg cac tgg gca aat gga gtt ctc ttt cag caa agg ttc tcc       240
Ala Met Leu His Trp Ala Asn Gly Val Leu Phe Gln Gln Arg Phe Ser
65                  70                  75                  80

tat gtt ttc tat ctc agc tgc cat aaa ata agg tac atg aag gaa act       288
Tyr Val Phe Tyr Leu Ser Cys His Lys Ile Arg Tyr Met Lys Glu Thr
                85                  90                  95

acc ttt gct gaa ttg att tct ttg gat tgg ccc gat ttt gat gcc ccc       336
Thr Phe Ala Glu Leu Ile Ser Leu Asp Trp Pro Asp Phe Asp Ala Pro
                100                 105                 110

att gaa gag ttc atg tct caa cca gag aag ctc ctg ttt att att gat       384
Ile Glu Glu Phe Met Ser Gln Pro Glu Lys Leu Leu Phe Ile Ile Asp
            115                 120                 125

ggc ttt gag gaa ata atc ata tct gag tca cgc tct gag agc ttg gat       432
Gly Phe Glu Glu Ile Ile Ile Ser Glu Ser Arg Ser Glu Ser Leu Asp
    130                 135                 140

gat ggc tcg cca tgt aca gac tgg tac cag gag ctc cca gtg acc aaa       480
Asp Gly Ser Pro Cys Thr Asp Trp Tyr Gln Glu Leu Pro Val Thr Lys
145                 150                 155                 160

atc cta cac agc ttg ttg aag aaa gaa ttg gtt ccc ctg gct acc tta       528
Ile Leu His Ser Leu Leu Lys Lys Glu Leu Val Pro Leu Ala Thr Leu
                165                 170                 175

ctg atc acg atc aag acc tgg ttt gtg aga gat ctt aag gcc tca tta       576
Leu Ile Thr Ile Lys Thr Trp Phe Val Arg Asp Leu Lys Ala Ser Leu
            180                 185                 190

gtg aat cca tgc ttt gta caa att aca ggg ttc aca ggg gac gac cta       624
Val Asn Pro Cys Phe Val Gln Ile Thr Gly Phe Thr Gly Asp Asp Leu
            195                 200                 205
```

FIG. 9A

```
cgg gta tat ttc atg aga cac ttt gat gac tca agt gaa gtt gag aaa      672
Arg Val Tyr Phe Met Arg His Phe Asp Asp Ser Ser Glu Val Glu Lys
    210             215             220

atc ctg cag cag cta aga aaa aac gaa act ctc ttt cat tcc tgc agt      720
Ile Leu Gln Gln Leu Arg Lys Asn Glu Thr Leu Phe His Ser Cys Ser
225             230             235             240

gcc ccc atg gtg tgt tgg acc gta tgt tcc tgt ctg aag cag ccg aag      768
Ala Pro Met Val Cys Trp Thr Val Cys Ser Cys Leu Lys Gln Pro Lys
            245             250             255

gtg agg tat tac gat ctc cag tca atc act cag act acc acc agt ctg      816
Val Arg Tyr Tyr Asp Leu Gln Ser Ile Thr Gln Thr Thr Thr Ser Leu
            260             265             270

tat gcc tat ttt ttc tcc aac ttg ttc tcc aca gca gag gta gat ttg      864
Tyr Ala Tyr Phe Phe Ser Asn Leu Phe Ser Thr Ala Glu Val Asp Leu
        275             280             285

gca gat gac agc tgg cca gga caa tgg agg gcc ctc tgc agt ctg gcc      912
Ala Asp Asp Ser Trp Pro Gly Gln Trp Arg Ala Leu Cys Ser Leu Ala
    290             295             300

ata gaa ggg ctg tgg tct atg aac ttc acg ttt aac aaa gaa gac act      960
Ile Glu Gly Leu Trp Ser Met Asn Phe Thr Phe Asn Lys Glu Asp Thr
305             310             315             320

gag atc gag ggc ctg gaa gtg cct ttc att gat tct ctc tac gag ttc     1008
Glu Ile Glu Gly Leu Glu Val Pro Phe Ile Asp Ser Leu Tyr Glu Phe
            325             330             335

aat att ctt caa aag atc aat gac tgt ggg ggt tgc act act ttc acc     1056
Asn Ile Leu Gln Lys Ile Asn Asp Cys Gly Gly Cys Thr Thr Phe Thr
            340             345             350

cac cta agt ttc cag gag ttt ttt gca gcc atg tcc ttt gtg cta gag     1104
His Leu Ser Phe Gln Glu Phe Phe Ala Ala Met Ser Phe Val Leu Glu
            355             360             365

gaa cct aga gaa ttc cct ccc cat tcc aca aag cca caa gag atg aag     1152
Glu Pro Arg Glu Phe Pro Pro His Ser Thr Lys Pro Gln Glu Met Lys
    370             375             380

atg tta ctg caa cac gtc ttg ctt gac aaa gaa gcc tac tgg act cca     1200
Met Leu Leu Gln His Val Leu Leu Asp Lys Glu Ala Tyr Trp Thr Pro
385             390             395             400

gtg gtt ctg ttc ttc ttt ggt ctt tta aat aaa aac ata gca aga gaa     1248
Val Val Leu Phe Phe Phe Gly Leu Leu Asn Lys Asn Ile Ala Arg Glu
            405             410             415
```

FIG. 9B

```
ctg gaa gat act ttg cat tgt aaa ata tct ccc agg gta atg gag gaa        1296
Leu Glu Asp Thr Leu His Cys Lys Ile Ser Pro Arg Val Met Glu Glu
            420                 425                 430

tta tta aag tgg gga gaa gag tta ggt aag gct gaa agt gcc tct ctc        1344
Leu Leu Lys Trp Gly Glu Glu Leu Gly Lys Ala Glu Ser Ala Ser Leu
            435                 440                 445

caa ttt cac att cta cga ctt ttt cac tgc cta cac gag tcc cag gag        1392
Gln Phe His Ile Leu Arg Leu Phe His Cys Leu His Glu Ser Gln Glu
            450                 455                 460

gaa gac ttc aca aag aag atg ttg ggt cgt atc ttt gaa gtt gac ctt        1440
Glu Asp Phe Thr Lys Lys Met Leu Gly Arg Ile Phe Glu Val Asp Leu
465                 470                 475                 480

aat att ttg gag gac gaa gaa ctc caa gct tct tca ttt tgc cta aag        1488
Asn Ile Leu Glu Asp Glu Glu Leu Gln Ala Ser Ser Phe Cys Leu Lys
                485                 490                 495

cac tgt aaa agg tta aat aag cta agg ctt tct gtt agc agt cac atc        1536
His Cys Lys Arg Leu Asn Lys Leu Arg Leu Ser Val Ser Ser His Ile
            500                 505                 510

ctt gaa agg gac ttg gaa att ctg gag tga                                1566
Leu Glu Arg Asp Leu Glu Ile Leu Glu
            515                 520
```

FIG. 9C

FIG. 11

- ■ Alpha, Regions - Garnier-Robson
- ■ Alpha, Regions - Chou-Fasman
- ■ Beta, Regions - Garnier-Robson
- ■ Beta, Regions - Chou-Fasman
- ■ Turn, Regions - Garnier-Robson
- ■ Turn, Regions - Chou-Fasman
- □ Coil, Regions - Garnier-Robson

- ■ Hydrophilicity Plot - Kyte-Doolittle

- ■ Alpha, Amphipathic Regions - Eisenberg
- ■ Beta, Amphipathic Regions - Eisenberg
- ■ Flexible Regions - Karplus-Schulz

- ▨ Antigenic Index - Jameson-Wolf

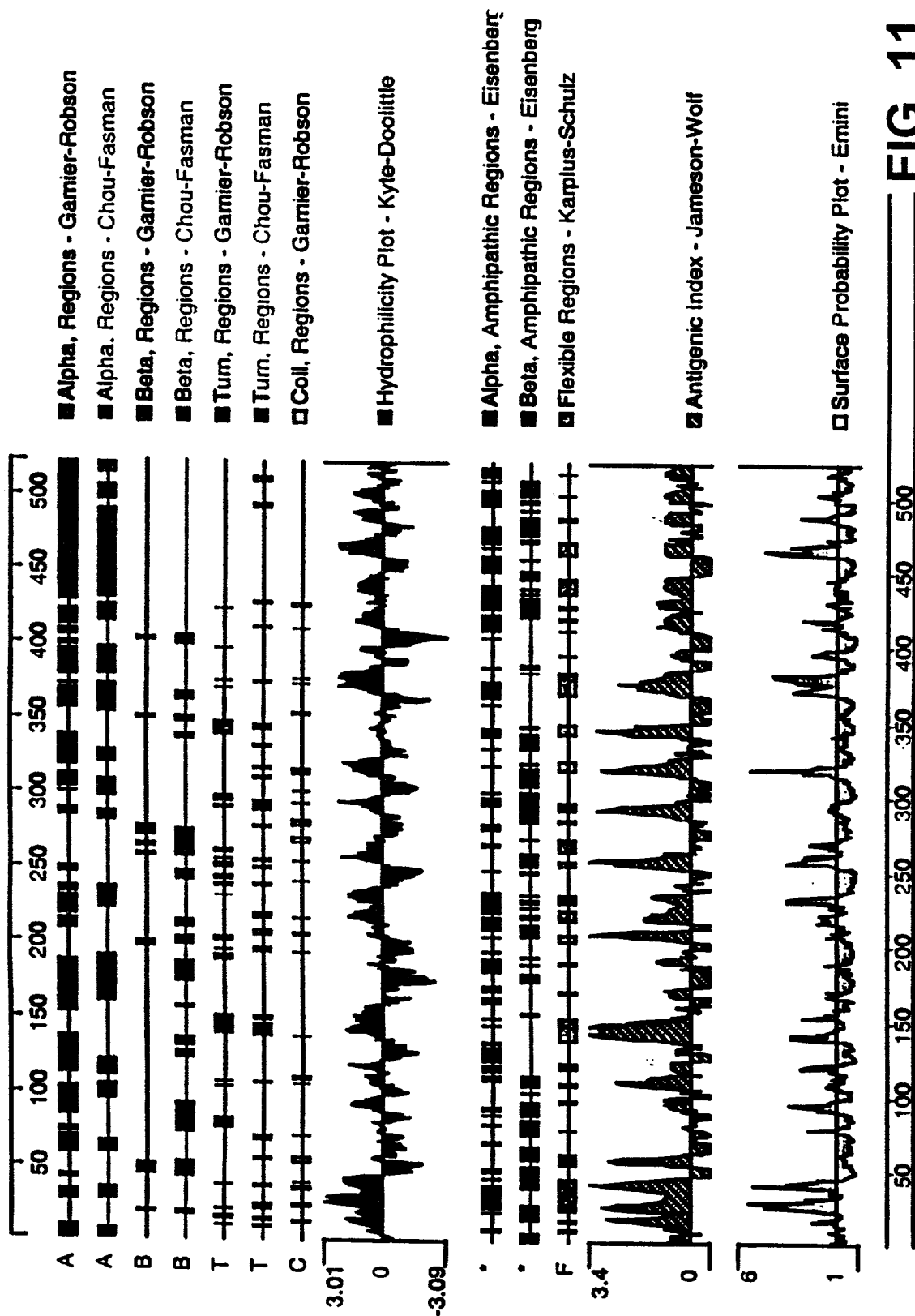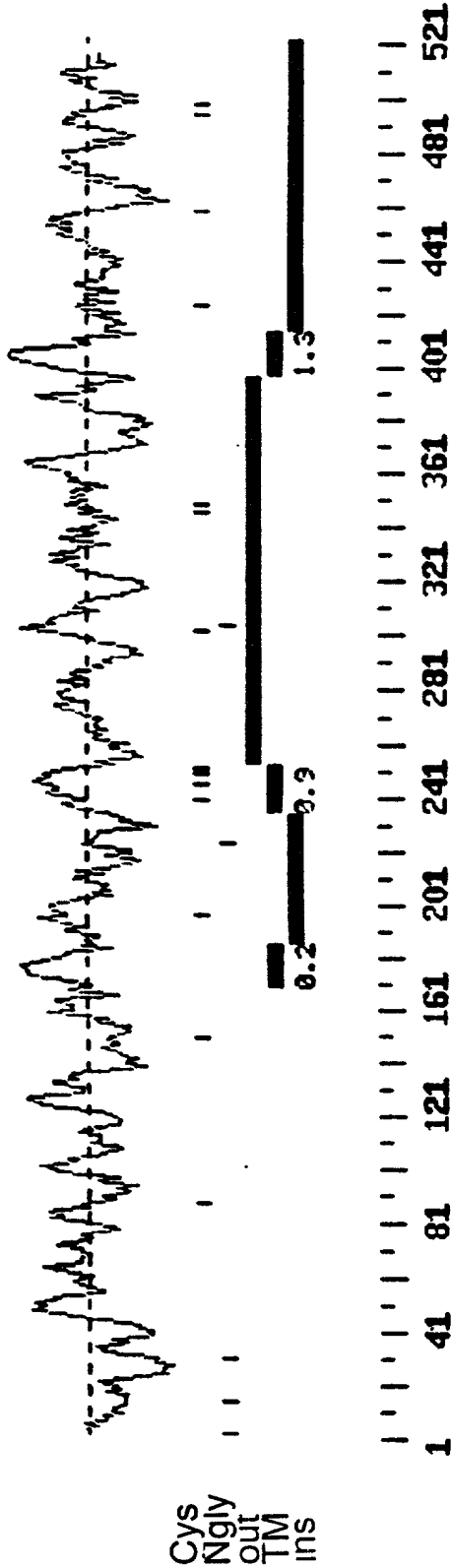- □ Surface Probability Plot - Emini

FIG. 10

NB-ARC: domain 1 of 1, from 50 to 79: score 9.4, E = 0.12

(SEQ ID NO:11) *->ivGMGGiGKTTLakqiyndes..qevqrhF<-*

```
                      +vG++G+GKTTLa q+   +++++ ++q  +F
NBS-4    50    LVGRAGVGKTTLAMQAMLHWAngvLFQQRF    79
```

FIG. 12

```
c agc cgc tta tgg tcc agc aag tct gtc act gag att cac cta tac ttt        49
  Ser Arg Leu Trp Ser Ser Lys Ser Val Thr Glu Ile His Leu Tyr Phe
  1               5                   10                  15


gag gag gaa gtc aag caa gaa gaa tgt gac cat ttg gac cgc ctt ttt         97
Glu Glu Glu Val Lys Gln Glu Glu Cys Asp His Leu Asp Arg Leu Phe
            20                  25                  30


gct ccc aag gaa gct ggg aaa cag cca cgt aca gtg atc att caa gga        145
Ala Pro Lys Glu Ala Gly Lys Gln Pro Arg Thr Val Ile Ile Gln Gly
        35                  40                  45


cca caa gga att gga aaa acg aca ctc ctg atg aag ctg atg atg gcc        193
Pro Gln Gly Ile Gly Lys Thr Thr Leu Leu Met Lys Leu Met Met Ala
    50                  55                  60


tgg tcg gac aac aag atc ttt cgg gat agg ttc ctg tac acg ttc tat        241
Trp Ser Asp Asn Lys Ile Phe Arg Asp Arg Phe Leu Tyr Thr Phe Tyr
65                  70                  75                  80


ttc tgc tgc aga gaa ctg agg gag ttg ccg cca acg agt ttg gct gac        289
Phe Cys Cys Arg Glu Leu Arg Glu Leu Pro Pro Thr Ser Leu Ala Asp
                85                  90                  95


ttg att tcc aga gag tgg cct gac ccc gct gct cct ata aca gag atc        337
Leu Ile Ser Arg Glu Trp Pro Asp Pro Ala Ala Pro Ile Thr Glu Ile
            100                 105                 110


gtg tct caa ccg gag aga ctc ttg ttc gtc atc gac agc ttc gaa gag        385
Val Ser Gln Pro Glu Arg Leu Leu Phe Val Ile Asp Ser Phe Glu Glu
        115                 120                 125


ctg cag ggc ggc ttg aac gaa ccc gat tcg gat ctg tgt ggt gac ttg        433
Leu Gln Gly Gly Leu Asn Glu Pro Asp Ser Asp Leu Cys Gly Asp Leu
    130                 135                 140


atg gag aaa cgg ccg gtg cag gtg ctt ctg agc agt ttg ctg agg aag        481
Met Glu Lys Arg Pro Val Gln Val Leu Leu Ser Ser Leu Leu Arg Lys
145                 150                 155                 160


aag atg ctc ccg gag gcc tcc ctg ctc atc gct atc aaa ccc gtg tgc        529
Lys Met Leu Pro Glu Ala Ser Leu Leu Ile Ala Ile Lys Pro Val Cys
                165                 170                 175


ccg aag gag ctc cgg gat cag gtg acg atc tca gaa atc tac cag ccc        577
Pro Lys Glu Leu Arg Asp Gln Val Thr Ile Ser Glu Ile Tyr Gln Pro
            180                 185                 190


cgg gga ttc aac gag agt gat agg tta gtg tat ttc tgc tgt ttc ttc        625
Arg Gly Phe Asn Glu Ser Asp Arg Leu Val Tyr Phe Cys Cys Phe Phe
        195                 200                 205
```

FIG. 13A

```
aaa gac ccg aaa aga gcc atg gaa gcc ttc aat ctt gta aga gaa agt      673
Lys Asp Pro Lys Arg Ala Met Glu Ala Phe Asn Leu Val Arg Glu Ser
        210             215             220

gaa cag ctg ttt tcc ata tgc caa atc ccg ctc ctc tgc tgg atc ctg      721
Glu Gln Leu Phe Ser Ile Cys Gln Ile Pro Leu Leu Cys Trp Ile Leu
225             230             235             240

tgt acc agt ctg aag caa gag atg cag aaa gga aaa gac ctg gcc ctg      769
Cys Thr Ser Leu Lys Gln Glu Met Gln Lys Gly Lys Asp Leu Ala Leu
            245             250             255

acc tgc cag agc act acc tct gtg tac tcc tct ttc gtc ttt aac ctg      817
Thr Cys Gln Ser Thr Thr Ser Val Tyr Ser Ser Phe Val Phe Asn Leu
            260             265             270

ttc aca cct gag ggt gcc gag ggc ccg act ccg caa acc cag cac cag      865
Phe Thr Pro Glu Gly Ala Glu Gly Pro Thr Pro Gln Thr Gln His Gln
            275             280             285

ctg aag gcc ctg tgc tcc ctg gct gca gag ggt atg tgg aca gac aca      913
Leu Lys Ala Leu Cys Ser Leu Ala Ala Glu Gly Met Trp Thr Asp Thr
        290             295             300

ttt gag ttt tgt gaa gac gac ctc cgg aga aat ggg gtt gtt gac gct      961
Phe Glu Phe Cys Glu Asp Asp Leu Arg Arg Asn Gly Val Val Asp Ala
305             310             315             320

gac atc cct gcg ctg ctg ggc acc aag ata ctt ctg aag tac ggg gag      1009
Asp Ile Pro Ala Leu Leu Gly Thr Lys Ile Leu Leu Lys Tyr Gly Glu
            325             330             335

cgt gag agc tcc tac gtg ttc ctc cac gtg tgt atc cag gag ttc tgt      1057
Arg Glu Ser Ser Tyr Val Phe Leu His Val Cys Ile Gln Glu Phe Cys
            340             345             350

gcc gcc ttg ttc tat ttg ctc aag agc cac ctt gat cat cct cac cca      1105
Ala Ala Leu Phe Tyr Leu Leu Lys Ser His Leu Asp His Pro His Pro
            355             360             365

gct gtg aga tgt gta cag gaa ttg cta gtt gcc aat ttt gaa aaa gca      1153
Ala Val Arg Cys Val Gln Glu Leu Leu Val Ala Asn Phe Glu Lys Ala
        370             375             380

agg aga gca cat tgg att ttt ttg ggg tgt ttt cta act ggc ctt tta      1201
Arg Arg Ala His Trp Ile Phe Leu Gly Cys Phe Leu Thr Gly Leu Leu
385             390             395             400

aat aaa aag gaa caa gaa aaa ctg gat gcg ttt ttt ggc ttc caa ctg      1249
Asn Lys Lys Glu Gln Glu Lys Leu Asp Ala Phe Phe Gly Phe Gln Leu
            405             410             415
```

FIG. 13B

```
tcc caa gag ata aag cag caa att cac cag tgc ctg aag agc tta ggg      1297
Ser Gln Glu Ile Lys Gln Gln Ile His Gln Cys Leu Lys Ser Leu Gly
            420                 425                 430

gag cgt ggc aat cct cag gga cag gtg gat tcc ttg gcg ata ttt tac      1345
Glu Arg Gly Asn Pro Gln Gly Gln Val Asp Ser Leu Ala Ile Phe Tyr
            435                 440                 445

tgt ctc ttt gaa atg cag gat cct gcc ttt gtg aag cag gca gtg aac      1393
Cys Leu Phe Glu Met Gln Asp Pro Ala Phe Val Lys Gln Ala Val Asn
        450                 455                 460

ctc ctc caa gaa gct aac ttt cat att att gac aac gtg gac ttg gtg      1441
Leu Leu Gln Glu Ala Asn Phe His Ile Ile Asp Asn Val Asp Leu Val
465                 470                 475                 480

gtt tct gcc tac tgc tta aaa tac tgc tcc agc ttg agg aaa ctc tgt      1489
Val Ser Ala Tyr Cys Leu Lys Tyr Cys Ser Ser Leu Arg Lys Leu Cys
                485                 490                 495

ttt tcc gtt caa aat gtc ttt aag aaa gag gat gaa cac agc tct acg      1537
Phe Ser Val Gln Asn Val Phe Lys Lys Glu Asp Glu His Ser Ser Thr
            500                 505                 510

tcg gat tac agc ctc atc tgt tgg cat cac atc tgc tct gtg ctc acc      1585
Ser Asp Tyr Ser Leu Ile Cys Trp His His Ile Cys Ser Val Leu Thr
            515                 520                 525

acc agc ggg cac ctc aga gag ctc cag gtg cag gac agc acc ctc agc      1633
Thr Ser Gly His Leu Arg Glu Leu Gln Val Gln Asp Ser Thr Leu Ser
        530                 535                 540

gag tcg acc ttt gtg acc tgg tgt aac cag ctg agg cat ccc agc tgt      1681
Glu Ser Thr Phe Val Thr Trp Cys Asn Gln Leu Arg His Pro Ser Cys
545                 550                 555                 560

cgc ctt cag aag ctt gga ata aat aac gtt tcc ttt tct ggc cag agt      1729
Arg Leu Gln Lys Leu Gly Ile Asn Asn Val Ser Phe Ser Gly Gln Ser
            565                 570                 575

gtt ctg ctc ttt gag gtg ctc ttt tat cag cca gac ttg aaa tac ctg      1777
Val Leu Leu Phe Glu Val Leu Phe Tyr Gln Pro Asp Leu Lys Tyr Leu
            580                 585                 590

agc ttc acc ctc acg aaa ctc tct cgt gat gac atc agg tcc ctc tgt      1825
Ser Phe Thr Leu Thr Lys Leu Ser Arg Asp Asp Ile Arg Ser Leu Cys
            595                 600                 605

gat gcc ttg aac tac cca gca ggc aac gtc aaa gag cta gcg ctg gta      1873
Asp Ala Leu Asn Tyr Pro Ala Gly Asn Val Lys Glu Leu Ala Leu Val
            610                 615                 620
```

FIG. 13C

```
aat tgt cac ctc tca ccc att gat tgt gaa gtc ctt gct ggc ctt cta        1921
Asn Cys His Leu Ser Pro Ile Asp Cys Glu Val Leu Ala Gly Leu Leu
625             630             635             640

acc aac aac aag aag ctg acg tat ctg aat gta tcc tgc aac cag tta        1969
Thr Asn Asn Lys Lys Leu Thr Tyr Leu Asn Val Ser Cys Asn Gln Leu
            645             650             655

gac aca ggc gtg ccc ctt ttg tgt gaa gcc ctg tgc agc cca gac acg        2017
Asp Thr Gly Val Pro Leu Leu Cys Glu Ala Leu Cys Ser Pro Asp Thr
            660             665             670

gtc ctg gta tac ctg atg ttg gct ttc tgc cac ctc agc gag cag tgc        2065
Val Leu Val Tyr Leu Met Leu Ala Phe Cys His Leu Ser Glu Gln Cys
            675             680             685

tgc gaa tac atc tct gaa atg ctt ctg cgt aac aag agc gtg cgc tat        2113
Cys Glu Tyr Ile Ser Glu Met Leu Leu Arg Asn Lys Ser Val Arg Tyr
            690             695             700

cta gac ctc agt gcc aat gtc ctg aag gac gaa gga ctg aaa act ctc        2161
Leu Asp Leu Ser Ala Asn Val Leu Lys Asp Glu Gly Leu Lys Thr Leu
705             710             715             720

tgc gag gcc ttg aaa cat ccg gac tgc tgc ctg gat tca ctg tgt ttg        2209
Cys Glu Ala Leu Lys His Pro Asp Cys Cys Leu Asp Ser Leu Cys Leu
            725             730             735

gta aaa tgt ttt atc act gct gct ggc tgt gaa gac ctc gcc tct gct        2257
Val Lys Cys Phe Ile Thr Ala Ala Gly Cys Glu Asp Leu Ala Ser Ala
            740             745             750

ctc atc agc aat caa aac ctg aag att ctg caa att ggg tgc aat gaa        2305
Leu Ile Ser Asn Gln Asn Leu Lys Ile Leu Gln Ile Gly Cys Asn Glu
            755             760             765

atc gga gat gtg ggt gtg cag ctg ttg tgt cgg gct ctg acg cat acg        2353
Ile Gly Asp Val Gly Val Gln Leu Leu Cys Arg Ala Leu Thr His Thr
770             775             780

gat tgc cgc tta gag att ctt ggg ttg gaa gaa tgt ggg tta acg agc        2401
Asp Cys Arg Leu Glu Ile Leu Gly Leu Glu Glu Cys Gly Leu Thr Ser
785             790             795             800

acc tgc tgt aag gat ctc gcg tct gtt ctc acc tgc agt aag acc ctg        2449
Thr Cys Cys Lys Asp Leu Ala Ser Val Leu Thr Cys Ser Lys Thr Leu
            805             810             815

cag cag ctc aac ctg acc ttg aac acc ttg gac cac aca ggg gtg gtt        2497
Gln Gln Leu Asn Leu Thr Leu Asn Thr Leu Asp His Thr Gly Val Val
            820             825             830
```

FIG. 13D

```
gta ctc tgt gag gcc ctg aga cac cca gag tgt gcc ctg cag gtg ctc      2545
Val Leu Cys Glu Ala Leu Arg His Pro Glu Cys Ala Leu Gln Val Leu
        835                     840                 845

ggg gtt gtt gca gga gta aga acc aag cag                              2575
Gly Val Val Ala Gly Val Arg Thr Lys Gln
        850                     855
```

FIG. 13E

FIG. 14

FIG. 15

- Alpha, Regions - Garnier-Robson
- Alpha, Regions - Chou-Fasman
- Beta, Regions - Garnier-Robson
- Beta, Regions - Chou-Fasman
- Turn, Regions - Garnier-Robson
- Turn, Regions - Chou-Fasman
- Coil, Regions - Garnier-Robson

- Hydrophilicity Plot - Kyte-Doolittle

- Alpha, Amphipathic Regions - Eisenberg
- Beta, Amphipathic Regions - Eisenberg
- Flexible Regions - Karplus-Schulz

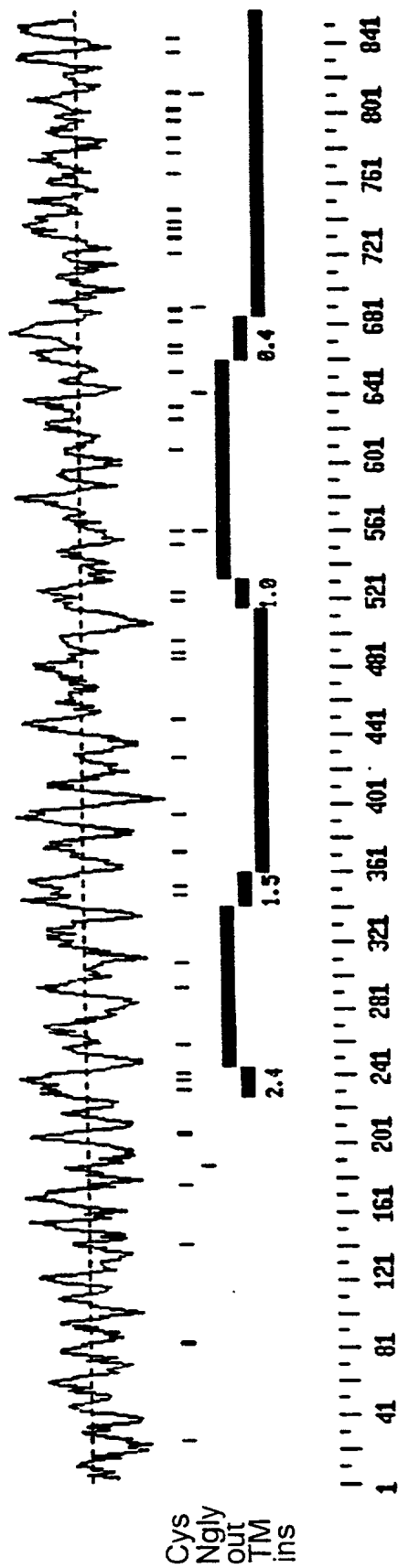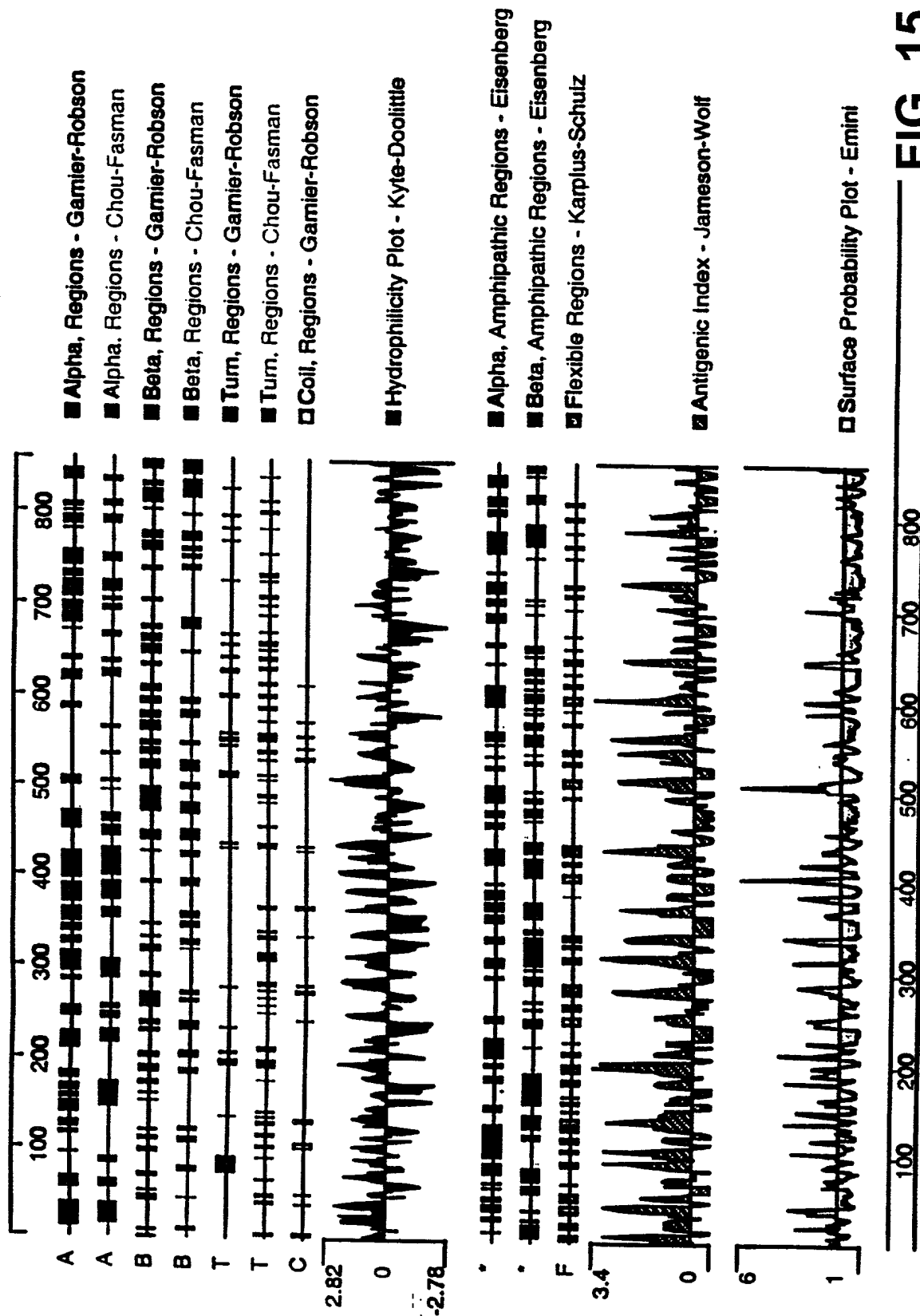- Antigenic Index - Jameson-Wolf

- Surface Probability Plot - Emini

LRR_RI_2: domain 1 of 8, from 530 to 557: score 6.4, E = 5.6
(SEQ ID NO:10) *->npsLreLdLsnNklgdeGaraLaeaLks<-*
+ +LreL++++ +l ++   ++-L++
NBS-5   530   SGHLRELQVQDSTLSESTFVTWCNQLRH   557

FIG. 16A

LRR_RI_2: domain 2 of 8, from 615 to 642: score 5.2, E = 8.4
(SEQ ID NO:10) *->npsLreLdLsnNklgdeGaraLaeaLks<-*
+ +eL L n++l +   + +La +L+
NBS-5   615   AGNVKELALVNCHLSPIDCEVLAGLLTN   642

FIG. 16B

LRR_RI_2: domain 3 of 8, from 643 to 669: score 9.3, E = 2.2
(SEQ ID NO:10) *->npsLreLdLsnNklgdeGaraLaeaLks<-*
n++L L++s+N l d G+ L+eaL s
NBS-5   643   NKKLTYLNVSCNQL-DTGVPLLCEALCS   669

FIG. 16C

LRR_RI_2: domain 4 of 8, from 699 to 726: score 32.8, E = 7.9e-06
(SEQ ID NO:10) *->npsLreLdLsnNklgdeGaraLaeaLks<-*
n+s r LdLs N l deG + L+eaLk+
NBS-5   699   NKSVRYLDLSANVLKDEGLKTLCEALKH   726

FIG. 16D

LRR_RI_2: domain 5 of 8, from 728 to 755: score 10.0, E = 1.8
(SEQ ID NO:10) *->npsLreLdLsnNklgdeGaraLaeaLks<-*
++L L L + ++++G+ La+aL s
NBS-5   728   DCCLDSLCLVKCFITAAGCEDLASALIS   755

FIG. 16E

LRR_RI_2: domain 6 of 8, from 756 to 783: score 30.9, E = 3e-05
(SEQ ID NO:10) *->npsLreLdLsnNklgdeGaraLaeaLks<-*
n++L+ L++++N +gd G++ L+ aL++
NBS-5   756   NQNLKILQIGCNEIGDVGVQLLCRALTH   783

FIG. 16F

LRR_RI_2: domain 7 of 8, from 785 to 812: score 8.0, E = 3.3
(SEQ ID NO:10) *->npsLreLdLsnNklgdeGaraLaeaLks<-*
++L+ L L+ ++l+   ++ La++L+
NBS-5   785   DCRLEILGLEECGLTSTCCKDLASVLTC   812

FIG. 16G

LRR_RI_2: domain 8 of 8, from 813 to 840: score 17.6, E = 0.14
(SEQ ID NO:10) *->npsLreLdLsnNklgdeGaraLaeaLks<-*
+++L+ L+L N+l   G+ +L+eaL++
NBS-5   813   SKFLQQLNLTLNTLDHTGVVVLCEALRH   840

FIG. 16H

```
gaattcgaat tcggggaagt tcttcagcct taacctaagg tctcatactc ggagcact          58
atg aca tcg ccc cag cta gag tgg act ctg cag acc ctt ctg gag cag         106
Met Thr Ser Pro Gln Leu Glu Trp Thr Leu Gln Thr Leu Leu Glu Gln
 1               5                  10                  15

ctg aac gag gat gaa tta aag agt ttc aaa tcc ctt tta tgg gct ttt         154
Leu Asn Glu Asp Glu Leu Lys Ser Phe Lys Ser Leu Leu Trp Ala Phe
                20                  25                  30

ccc ctc gaa gac gtg cta cag aag acc cca tgg tct gag gtg gaa gag         202
Pro Leu Glu Asp Val Leu Gln Lys Thr Pro Trp Ser Glu Val Glu Glu
            35                  40                  45

gct gat ggc aag aaa ctg gca gaa att ctg gtc aac acc tcc tca gaa         250
Ala Asp Gly Lys Lys Leu Ala Glu Ile Leu Val Asn Thr Ser Ser Glu
        50                  55                  60

aat tgg ata agg aat gcg act gtg aac atc ttg gaa gag atg aat ctc         298
Asn Trp Ile Arg Asn Ala Thr Val Asn Ile Leu Glu Glu Met Asn Leu
65                  70                  75                  80

acg gaa ttg tgt aag atg gca aag gct gag atg atg gag gac gga cag         346
Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln
                85                  90                  95

gtg caa gaa ata gat aat cct gag ctg gga gat gca gaa gaa gac tcg         394
Val Gln Glu Ile Asp Asn Pro Glu Leu Gly Asp Ala Glu Glu Asp Ser
                100                 105                 110

gag tta gca aag cca ggt gaa aag gaa gga tgg aga aat tca atg gag         442
Glu Leu Ala Lys Pro Gly Glu Lys Glu Gly Trp Arg Asn Ser Met Glu
            115                 120                 125

aaa cag tct ttg gtc tgg aag aac acc ttt tgg caa gga gac att gac         490
Lys Gln Ser Leu Val Trp Lys Asn Thr Phe Trp Gln Gly Asp Ile Asp
        130                 135                 140

aat ttc cat gac gac gtc act ctg aga aac caa cgg ttc att cca ttc         538
Asn Phe His Asp Asp Val Thr Leu Arg Asn Gln Arg Phe Ile Pro Phe
145                 150                 155                 160

ttg aat ccc aga aca ccc agg aag cta aca cct tac acg gtg gtg ctg         586
Leu Asn Pro Arg Thr Pro Arg Lys Leu Thr Pro Tyr Thr Val Val Leu
                165.                170                 175

cac ggc ccc gca ggc gtg ggg aaa acc acg ctg gcc aaa aag tgt atg         634
His Gly Pro Ala Gly Val Gly Lys Thr Thr Leu Ala Lys Lys Cys Met
            180                 185                 190

ctg gac tgg aca gac tgc aac ctc agc ccg acg ctc aga tac gcg ttc         682
Leu Asp Trp Thr Asp Cys Asn Leu Ser Pro Thr Leu Arg Tyr Ala Phe
            195                 200                 205

tac ctc agc tgc aag gag ctc agc cgc atg ggc ccc tgc agt ttt gca         730
Tyr Leu Ser Cys Lys Glu Leu Ser Arg Met Gly Pro Cys Ser Phe Ala
            210                 215                 220
```

FIG. 17A

```
gag ctg atc tcc aaa gac tgg cct gaa ttg cag gat gac att cca agc        778
Glu Leu Ile Ser Lys Asp Trp Pro Glu Leu Gln Asp Asp Ile Pro Ser
225                 230                 235                 240

atc cta gcc caa gca cag aga atc ctg ttc gtg gtc gat ggc ctt gat        826
Ile Leu Ala Gln Ala Gln Arg Ile Leu Phe Val Val Asp Gly Leu Asp
                    245                 250                 255

gag ctg aaa gtc cca cct ggg gcg ctg atc cag gac atc tgc ggg gac        874
Glu Leu Lys Val Pro Pro Gly Ala Leu Ile Gln Asp Ile Cys Gly Asp
                260                 265                 270

tgg gag aag aag aag ccg gtg ccc gtc ctc ctg ggg agt ttg ctg aag        922
Trp Glu Lys Lys Lys Pro Val Pro Val Leu Leu Gly Ser Leu Leu Lys
                275                 280                 285

agg aag atg tta ccc agg gca gcc ttg ctg gtc acc acg cgg ccc agg        970
Arg Lys Met Leu Pro Arg Ala Ala Leu Leu Val Thr Thr Arg Pro Arg
                290                 295                 300

gca ctg agg gac ctc cag ctc ctg gcg cag cag ccg atc tac gta agg       1018
Ala Leu Arg Asp Leu Gln Leu Leu Ala Gln Gln Pro Ile Tyr Val Arg
305                 310                 315                 320

gtg gag ggc ttc ctg gag gag gac agg agg gcc tat ttc ctg aga cac       1066
Val Glu Gly Phe Leu Glu Glu Asp Arg Arg Ala Tyr Phe Leu Arg His
                325                 330                 335

ttt gga gac gag gac caa gcc atg cgt gcc ttt gag cta atg agg agc       1114
Phe Gly Asp Glu Asp Gln Ala Met Arg Ala Phe Glu Leu Met Arg Ser
                340                 345                 350

aac gcg gcc ctg ttc cag ctg ggc tcg gcc ccc gcg gtg tgc tgg att       1162
Asn Ala Ala Leu Phe Gln Leu Gly Ser Ala Pro Ala Val Cys Trp Ile
                355                 360                 365

gtg tgc acg act ctg aag ctg cag atg gag aag ggg gag gac ccg gtc       1210
Val Cys Thr Thr Leu Lys Leu Gln Met Glu Lys Gly Glu Asp Pro Val
                370                 375                 380

ccc acc tgc ctc acc cgc acg ggg ctg ttc ctg cgt ttc ctc tgc agc       1258
Pro Thr Cys Leu Thr Arg Thr Gly Leu Phe Leu Arg Phe Leu Cys Ser
385                 390                 395                 400

cgg ttc ccg cag ggc gca cag ctg cgg ggc gcg ctg cgg acg ctg agc       1306
Arg Phe Pro Gln Gly Ala Gln Leu Arg Gly Ala Leu Arg Thr Leu Ser
                405                 410                 415

ctc ctg gcc gcg cag ggc ctg tgg gcg cag atg tcc gtg ttc cac cga       1354
Leu Leu Ala Ala Gln Gly Leu Trp Ala Gln Met Ser Val Phe His Arg
                420                 425                 430

gag gac ctg gaa agg ctc ggg gtg cag gag tcc gac ctc cgt ctg ttc       1402
Glu Asp Leu Glu Arg Leu Gly Val Gln Glu Ser Asp Leu Arg Leu Phe
                435                 440                 445
```

FIG. 17B

```
ctg gac gga gac atc ctc cgc cag gac aga gtc tcc aaa ggc tgc tac        1450
Leu Asp Gly Asp Ile Leu Arg Gln Asp Arg Val Ser Lys Gly Cys Tyr
    450                 455                 460

tcc ttc atc cac ctc agc ttc cag cag ttt ctc act gcc ctg ttc tac        1498
Ser Phe Ile His Leu Ser Phe Gln Gln Phe Leu Thr Ala Leu Phe Tyr
465                 470                 475                 480

gcc ctg gag aag gag gag ggg gag gac agg gac ggc cac gcc tgg gac        1546
Ala Leu Glu Lys Glu Glu Gly Glu Asp Arg Asp Gly His Ala Trp Asp
                485                 490                 495

atc ggg gac gta cag aag ctg ctt tcc gga gaa gaa aga ctc aag aac        1594
Ile Gly Asp Val Gln Lys Leu Leu Ser Gly Glu Glu Arg Leu Lys Asn
                500                 505                 510

ccc gac ctg att caa gta gga cac ttc tta ttc ggc ctc gct aac gag        1642
Pro Asp Leu Ile Gln Val Gly His Phe Leu Phe Gly Leu Ala Asn Glu
                515                 520                 525

aag aga gcc aag gag ttg gag gcc act ttt ggc tgc cgg atg tca ccg        1690
Lys Arg Ala Lys Glu Leu Glu Ala Thr Phe Gly Cys Arg Met Ser Pro
    530                 535                 540

gac atc aaa cag gaa ttg ctg caa tgc aaa gca cat ctt cat gca aat        1738
Asp Ile Lys Gln Glu Leu Leu Gln Cys Lys Ala His Leu His Ala Asn
545                 550                 555                 560

aag ccc tta tcc gtg acc gac ctg aag gag gtc ttg ggc tgc ctg tat        1786
Lys Pro Leu Ser Val Thr Asp Leu Lys Glu Val Leu Gly Cys Leu Tyr
                565                 570                 575

gag tct cag gag gag gag ctg gcg aag gtg gtg gtg gcc ccg ttc aag        1834
Glu Ser Gln Glu Glu Glu Leu Ala Lys Val Val Val Ala Pro Phe Lys
                580                 585                 590

gaa att tct att cac ctg aca aat act tct gaa gtg atg cat tgt tcc        1882
Glu Ile Ser Ile His Leu Thr Asn Thr Ser Glu Val Met His Cys Ser
                595                 600                 605

ttc agc ctg aag cat tgt caa gac ttg cag aaa ctc tca ctg cag gta        1930
Phe Ser Leu Lys His Cys Gln Asp Leu Gln Lys Leu Ser Leu Gln Val
610                 615                 620

gca aag ggg gtg ttc ctg gag aat tac atg gat ttt gaa ctg gac att        1978
Ala Lys Gly Val Phe Leu Glu Asn Tyr Met Asp Phe Glu Leu Asp Ile
625                 630                 635                 640

gaa ttt gaa agg tgc act tac cta acc att ccg aac tgg gct cgg cag        2026
Glu Phe Glu Arg Cys Thr Tyr Leu Thr Ile Pro Asn Trp Ala Arg Gln
                645                 650                 655

gat ctt cgc tct ctt cgc ctc tgg aca gat ttc tgc tct ctc ttc agc        2074
Asp Leu Arg Ser Leu Arg Leu Trp Thr Asp Phe Cys Ser Leu Phe Ser
                660                 665                 670
```

FIG. 17C

```
tca aac agc aac ctc aag ttt ctg gaa gtg aaa caa agc ttc ctg agt        2122
Ser Asn Ser Asn Leu Lys Phe Leu Glu Val Lys Gln Ser Phe Leu Ser
        675             680             685

gac tct tct gtg cgg att ctt tgt gac cac gta acc cgt agc acc tgt        2170
Asp Ser Ser Val Arg Ile Leu Cys Asp His Val Thr Arg Ser Thr Cys
        690             695             700

cat ctg cag aaa gtg gag att aaa aac gtc acc cct gac acc gcg tac        2218
His Leu Gln Lys Val Glu Ile Lys Asn Val Thr Pro Asp Thr Ala Tyr
705             710             715             720

cgg gac ttc tgt ctt gct ttc att ggg aag aag acc ctc acg cac ctg        2266
Arg Asp Phe Cys Leu Ala Phe Ile Gly Lys Lys Thr Leu Thr His Leu
            725             730             735

acc ctg gca ggg cac atc gag tgg gaa cgc acg atg atg ctg atg ctg        2314
Thr Leu Ala Gly His Ile Glu Trp Glu Arg Thr Met Met Leu Met Leu
            740             745             750

tgt gac ctg ctc aga aat cat aaa tgc aac ctg cag tac ctg agg ttg        2362
Cys Asp Leu Leu Arg Asn His Lys Cys Asn Leu Gln Tyr Leu Arg Leu
            755             760             765

gga ggt cac tgt gcc acc ccg gag cag tgg gct gaa ttc ttc tat gtc        2410
Gly Gly His Cys Ala Thr Pro Glu Gln Trp Ala Glu Phe Phe Tyr Val
        770             775             780

ctc aaa gcc aac cag tcc ctg aag cac ctg cgt ctc tca gcc aat gtg        2458
Leu Lys Ala Asn Gln Ser Leu Lys His Leu Arg Leu Ser Ala Asn Val
785             790             795             800

ctc ctg gat gag ggt gcc atg ttg ctg tac aag acc atg aca cgc cca        2506
Leu Leu Asp Glu Gly Ala Met Leu Leu Tyr Lys Thr Met Thr Arg Pro
            805             810             815

aaa cac ttc ctg cag atg ttg tcg ttg gaa aac tgt cgt ctt aca gaa        2554
Lys His Phe Leu Gln Met Leu Ser Leu Glu Asn Cys Arg Leu Thr Glu
            820             825             830

gcc agt tgc aag gac ctt gct gct gtc ttg gtt gtc agc aag aag ctg        2602
Ala Ser Cys Lys Asp Leu Ala Ala Val Leu Val Val Ser Lys Lys Leu
            835             840             845

aca cac ctg tgc ttg gcc aag aac ccc att ggg gat aca ggg gtg aag        2650
Thr His Leu Cys Leu Ala Lys Asn Pro Ile Gly Asp Thr Gly Val Lys
        850             855             860

ttt ctg tgt gag ggc ttg agt tac cct gat tgt aaa ctg cag acc ttg        2698
Phe Leu Cys Glu Gly Leu Ser Tyr Pro Asp Cys Lys Leu Gln Thr Leu
865             870             875             880

gtg tta cag caa tgc agc ata acc aag ctt ggc tgt aga tat ctc tca        2746
Val Leu Gln Gln Cys Ser Ile Thr Lys Leu Gly Cys Arg Tyr Leu Ser
            885             890             895
```

FIG. 17D

```
gag gcg ctc caa gaa gcc tgc agc ctc aca aac ctg gac ttg agt atc        2794
Glu Ala Leu Gln Glu Ala Cys Ser Leu Thr Asn Leu Asp Leu Ser Ile
            900             905             910

aac cag ata gct cgt gga ttg tgg att ctc tgt cag gca tta gag aat        2842
Asn Gln Ile Ala Arg Gly Leu Trp Ile Leu Cys Gln Ala Leu Glu Asn
            915             920             925

cca aac tgt aac cta aaa cac cta cgg ttg aag acc tat gaa act aat        2890
Pro Asn Cys Asn Leu Lys His Leu Arg Leu Lys Thr Tyr Glu Thr Asn
            930             935             940

ttg gaa atc aag aag ctg ttg gag gaa gtg aaa gaa aag aat ccc aag        2938
Leu Glu Ile Lys Lys Leu Leu Glu Glu Val Lys Glu Lys Asn Pro Lys
945             950             955             960

ctg act att gat tgc aat gct tcc ggg gca acg gca cct ccg tgc tgt        2986
Leu Thr Ile Asp Cys Asn Ala Ser Gly Ala Thr Ala Pro Pro Cys Cys
                965             970             975

gac ttt ttt tgc tgagcagcct gggatcgctc tacgaattac acaggaagcg           3038
Asp Phe Phe Cys
                980

ggattcgggt ctctaagatg tcttatgaat gcaggtcaga gggtcacatg ttaacactag      3098
agtctgtcga gaggtaggat ttgacactgg ttttctcact atttttggga gattctgcac      3158
gagtcacgca ccccttcac atgacgctat gtactttctc acagggataa taaagttaga       3218
gcactctcaa aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaa                       3263
```

FIG. 17E

```
atg gca gaa tcg gat tct act gac ttt gac ctg ctg tgg tat cta gag        48
Met Ala Glu Ser Asp Ser Thr Asp Phe Asp Leu Leu Trp Tyr Leu Glu
 1               5               10              15

aat ctc agt gac aag gaa ttt cag agt ttt aag aag tat ctg gca cgc        96
Asn Leu Ser Asp Lys Glu Phe Gln Ser Phe Lys Lys Tyr Leu Ala Arg
            20              25              30

aag att ctt gat ttc aaa ctg cca cag ttt cca ctg ata cag atg aca       144
Lys Ile Leu Asp Phe Lys Leu Pro Gln Phe Pro Leu Ile Gln Met Thr
            35              40              45

aaa gaa gaa ctg gct aac gtg ttg cca atc tct tat gag gga cag tat       192
Lys Glu Glu Leu Ala Asn Val Leu Pro Ile Ser Tyr Glu Gly Gln Tyr
        50              55              60

ata tgg aat atg ctc ttc agc ata ttt tca atg atg cgt aag gaa gat       240
Ile Trp Asn Met Leu Phe Ser Ile Phe Ser Met Met Arg Lys Glu Asp
 65              70              75              80

ctt tgt agg aag atc att ggc aga cga aac cat gtg ttc tac ata ctt       288
Leu Cys Arg Lys Ile Ile Gly Arg Arg Asn His Val Phe Tyr Ile Leu
                85              90              95

caa tta gcc tat gat tct acc agc tat tat tca gca aac aat ctc aat       336
Gln Leu Ala Tyr Asp Ser Thr Ser Tyr Tyr Ser Ala Asn Asn Leu Asn
            100             105             110

gtg ttc ctg atg gga gag aga gca tct gga aaa act att gtt ata aat       384
Val Phe Leu Met Gly Glu Arg Ala Ser Gly Lys Thr Ile Val Ile Asn
            115             120             125

ctg gct gtg ttg agg tgg atc aag ggt gag atg tgg cag aac atg atc       432
Leu Ala Val Leu Arg Trp Ile Lys Gly Glu Met Trp Gln Asn Met Ile
            130             135             140

tcg tac gtc gtt cac ctc act tct cac gaa ata aac cag atg acc aac       480
Ser Tyr Val Val His Leu Thr Ser His Glu Ile Asn Gln Met Thr Asn
145             150             155             160

agc agc ttg gct gag cta atc gcc aag gac tgg cct gac ggc cag gct       528
Ser Ser Leu Ala Glu Leu Ile Ala Lys Asp Trp Pro Asp Gly Gln Ala
            165             170             175

ccc att gca gac atc ctg tct gat ccc aag aaa ctc ctt ttc att ctc       576
Pro Ile Ala Asp Ile Leu Ser Asp Pro Lys Lys Leu Leu Phe Ile Leu
            180             185             190

gag gac ttg gac aac ata aga ttc gag tta aat gtc aat gaa agt gct       624
Glu Asp Leu Asp Asn Ile Arg Phe Glu Leu Asn Val Asn Glu Ser Ala
            195             200             205

ttg tgt agt aac agc acc cag aaa gtt ccc att cca gtt ctc ctg gtc       672
Leu Cys Ser Asn Ser Thr Gln Lys Val Pro Ile Pro Val Leu Leu Val
210             215             220
```

FIG. 18A

```
agt ttg ctg aag aga aaa atg gct cca ggc tgc tgg ttc ctc atc tcc        720
Ser Leu Leu Lys Arg Lys Met Ala Pro Gly Cys Trp Phe Leu Ile Ser
225                 230             235                 240

tca agg ccc aca cgt ggg aat aat gta aaa acg ttc ttg aaa gag gta        768
Ser Arg Pro Thr Arg Gly Asn Asn Val Lys Thr Phe Leu Lys Glu Val
                245             250                 255

gat tgc tgc acg acc ttg cag ctg tcg aat ggg aag agg gag ata tat        816
Asp Cys Cys Thr Thr Leu Gln Leu Ser Asn Gly Lys Arg Glu Ile Tyr
                260             265                 270

ttt aac tct ttc ttt aaa gac cgc cag agg gcg tcg gca gcc ctc cag        864
Phe Asn Ser Phe Phe Lys Asp Arg Gln Arg Ala Ser Ala Ala Leu Gln
                275             280                 285

ctt gta cat gag gat gaa ata ctc gtg ggt ctg tgc cga gtc gcc atc        912
Leu Val His Glu Asp Glu Ile Leu Val Gly Leu Cys Arg Val Ala Ile
                290             295                 300

tta tgc tgg atc acg tgt act gtc ctg aag cgg cag atg gac aag ggg        960
Leu Cys Trp Ile Thr Cys Thr Val Leu Lys Arg Gln Met Asp Lys Gly
305                 310             315                 320

cgt gac ttc cag ctc tgc tgc caa aca ccc act gat cta cat gcc cac       1008
Arg Asp Phe Gln Leu Cys Cys Gln Thr Pro Thr Asp Leu His Ala His
                325             330                 335

ttt ctt gct gat gcg ttg aca tca gag gct gga ctt act gcc aat cag       1056
Phe Leu Ala Asp Ala Leu Thr Ser Glu Ala Gly Leu Thr Ala Asn Gln
                340             345                 350

tat cac cta ggt ctc cta aaa cgt ctg tgt ttg ctg gct gca gga gga       1104
Tyr His Leu Gly Leu Leu Lys Arg Leu Cys Leu Leu Ala Ala Gly Gly
                355             360                 365

ctg ttt ctg agc acc ctg aat ttc agt ggt gaa gac ctc aga tgt gtt       1152
Leu Phe Leu Ser Thr Leu Asn Phe Ser Gly Glu Asp Leu Arg Cys Val
370                 375             380

ggg ttt act gag gct gat gtc tct gtg ttg cag gcc gcg aat att ctt       1200
Gly Phe Thr Glu Ala Asp Val Ser Val Leu Gln Ala Ala Asn Ile Leu
385                 390             395                 400

ttg ccg agc aac act cat aaa gac cgt tac aag ttc ata cac ttg aac       1248
Leu Pro Ser Asn Thr His Lys Asp Arg Tyr Lys Phe Ile His Leu Asn
                405             410                 415

gtc cag gag ttt tgt aca gcc att gca ttt ctg atg gca gta ccc aac       1296
Val Gln Glu Phe Cys Thr Ala Ile Ala Phe Leu Met Ala Val Pro Asn
                420             425                 430

tat ctg atc ccc tca ggc agc aga gag tat aaa gag aag aga gaa caa       1344
Tyr Leu Ile Pro Ser Gly Ser Arg Glu Tyr Lys Glu Lys Arg Glu Gln
                435             440             445
```

FIG. 18B

```
tac tct gac ttt aat caa gtg ttt act ttc att ttt ggt ctt cta aat       1392
Tyr Ser Asp Phe Asn Gln Val Phe Thr Phe Ile Phe Gly Leu Leu Asn
    450                 455                 460

gca aac agg aga aag att ctt gag aca tcc ttt gga tac cag cta ccg       1440
Ala Asn Arg Arg Lys Ile Leu Glu Thr Ser Phe Gly Tyr Gln Leu Pro
465                 470                 475                 480

atg gta gac agc ttc aag tgg tac tcg gtg gga tac atg aaa cat ttg       1488
Met Val Asp Ser Phe Lys Trp Tyr Ser Val Gly Tyr Met Lys His Leu
                485                 490                 495

gac cgt gac ccg gaa aag ttg acg cac cat atg cct ttg ttt tac tgt       1536
Asp Arg Asp Pro Glu Lys Leu Thr His His Met Pro Leu Phe Tyr Cys
                500                 505                 510

ctc tat gag aat cgg gaa gaa gaa ttt gtg aag acg att gtg gat gct       1584
Leu Tyr Glu Asn Arg Glu Glu Glu Phe Val Lys Thr Ile Val Asp Ala
            515                 520                 525

ctc atg gag gtt aca gtt tac ctt caa tca gac aag gat atg atg gtc       1632
Leu Met Glu Val Thr Val Tyr Leu Gln Ser Asp Lys Asp Met Met Val
        530                 535                 540

tca tta tac tgt ctg gat tac tgc tgt cac ctg agg aca ctt aag ttg       1680
Ser Leu Tyr Cys Leu Asp Tyr Cys Cys His Leu Arg Thr Leu Lys Leu
545                 550                 555                 560

agt gtt cag cgc atc ttt caa aac aaa gag cca ctt ata agg cca act       1728
Ser Val Gln Arg Ile Phe Gln Asn Lys Glu Pro Leu Ile Arg Pro Thr
                565                 570                 575

gct agt caa atg aag agc ctt gtc tac tgg aga gag atc tgc tct ctt       1776
Ala Ser Gln Met Lys Ser Leu Val Tyr Trp Arg Glu Ile Cys Ser Leu
                580                 585                 590

ttt tat aca atg gag agc ctc cgg gag ctg cat atc ttt gac aat gac       1824
Phe Tyr Thr Met Glu Ser Leu Arg Glu Leu His Ile Phe Asp Asn Asp
                595                 600                 605

ctt aat ggt att tca gaa agg att ctg tct aaa gcc ctg gag cat tct       1872
Leu Asn Gly Ile Ser Glu Arg Ile Leu Ser Lys Ala Leu Glu His Ser
        610                 615                 620

agc tgt aaa ctt cgc aca ctc aag ttg tcc tat gtc tcg act gct tct       1920
Ser Cys Lys Leu Arg Thr Leu Lys Leu Ser Tyr Val Ser Thr Ala Ser
625                 630                 635                 640

ggt ttt gaa gac tta ctc aag gct ttg gct cgt aat cgg agc ctg aca       1968
Gly Phe Glu Asp Leu Leu Lys Ala Leu Ala Arg Asn Arg Ser Leu Thr
                645                 650                 655

tac ctg agt atc aac tgt acg tcc att tcc cta aat atg ttt tca ctt       2016
Tyr Leu Ser Ile Asn Cys Thr Ser Ile Ser Leu Asn Met Phe Ser Leu
            660                 665                 670
```

FIG. 18C

```
ctg cat gac atc ctg cac gag ccc aca tgc caa ata agt cat ctg agc      2064
Leu His Asp Ile Leu His Glu Pro Thr Cys Gln Ile Ser His Leu Ser
        675                 680                 685

ttg atg aaa tgt gat ttg cga gcc agc gaa tgc gaa gaa atc gcc tct      2112
Leu Met Lys Cys Asp Leu Arg Ala Ser Glu Cys Glu Glu Ile Ala Ser
        690                 695                 700

ctc ctc atc agt ggc ggg agt ctg aga aaa ctg acc tta tcc agc aat      2160
Leu Leu Ile Ser Gly Gly Ser Leu Arg Lys Leu Thr Leu Ser Ser Asn
705                 710                 715                 720

ccg ctg agg agc gac ggg atg aac ata ctg tgt gat gcc ttg ctt cat      2208
Pro Leu Arg Ser Asp Gly Met Asn Ile Leu Cys Asp Ala Leu Leu His
                725                 730                 735

ccc aac tgc act ctt ata tca ctg gtt ctg tct ggc tgt ttc ttt agc      2256
Pro Asn Cys Thr Leu Ile Ser Leu Val Leu Ser Gly Cys Phe Phe Ser
                740                 745                 750

agc gat atc tgt caa tat att gcc ata gtt att gct act aat gaa aaa      2304
Ser Asp Ile Cys Gln Tyr Ile Ala Ile Val Ile Ala Thr Asn Glu Lys
        755                 760                 765

ctg agg agc ctg gag att ggg agc aac aaa ata gaa gat gca gga atg      2352
Leu Arg Ser Leu Glu Ile Gly Ser Asn Lys Ile Glu Asp Ala Gly Met
        770                 775                 780

cag ctg cta tgt ggt ggt ttg aga cat ccc aac tgc atg ttg gtg aat      2400
Gln Leu Leu Cys Gly Gly Leu Arg His Pro Asn Cys Met Leu Val Asn
785                 790                 795                 800

att ggg cta gaa gag tgc atg tta acc agt gcc tgc tgt cga tct ctt      2448
Ile Gly Leu Glu Glu Cys Met Leu Thr Ser Ala Cys Cys Arg Ser Leu
                805                 810                 815

gcc tct gtt ctt acc acc aac aaa aca cta gaa aga ctc aac ttg ctt      2496
Ala Ser Val Leu Thr Thr Asn Lys Thr Leu Glu Arg Leu Asn Leu Leu
                820                 825                 830

caa aat cac ttg ggc aat gat gga gtt gca aaa ctt ctt gag agc ttg      2544
Gln Asn His Leu Gly Asn Asp Gly Val Ala Lys Leu Leu Glu Ser Leu
                835                 840                 845

atc agc cca gat tgt gta ctt aag gta gtt ggc ttg atg gct gct gag      2592
Ile Ser Pro Asp Cys Val Leu Lys Val Val Gly Leu Met Ala Ala Glu
        850                 855                 860

aac atg gag tcc ctc att ccc agg cca gca cgc tga                      2628
Asn Met Glu Ser Leu Ile Pro Arg Pro Ala Arg
865                 870                 875
```

FIG. 18D

```
atg tat gag ttt tat att cac aaa ggt tat gat gat gtg tct tca gac          48
Met Tyr Glu Phe Tyr Ile His Lys Gly Tyr Asp Asp Val Ser Ser Asp
  1               5                    10                   15

aac agc aga gag aaa atc aaa ggt gaa ccc tct gaa tgt gag ttg ggg          96
Asn Ser Arg Glu Lys Ile Lys Gly Glu Pro Ser Glu Cys Glu Leu Gly
               20                   25                   30

cac ttc ccg cgt atc ccc tgg gca aac ttg aga gct gcc gac cct ttg        144
His Phe Pro Arg Ile Pro Trp Ala Asn Leu Arg Ala Ala Asp Pro Leu
           35                   40                   45

aat ctg tcc ttt ctt ttg gat gaa cac ttc cca aaa ggt cag gca tgg        192
Asn Leu Ser Phe Leu Leu Asp Glu His Phe Pro Lys Gly Gln Ala Trp
     50                   55                   60

aaa gtg gtc ctc ggc atc ttc cag aca atg aat ctg acc tca ctg tgt        240
Lys Val Val Leu Gly Ile Phe Gln Thr Met Asn Leu Thr Ser Leu Cys
 65                   70                   75                   80

gag aaa gtt aga gcc gag atg aaa gag aat gtg cag acc caa gag ctg        288
Glu Lys Val Arg Ala Glu Met Lys Glu Asn Val Gln Thr Gln Glu Leu
                 85                   90                   95

caa gat cca acc cag gaa gat cta gag atg cta gaa gca gca gca ggg        336
Gln Asp Pro Thr Gln Glu Asp Leu Glu Met Leu Glu Ala Ala Ala Gly
               100                  105                  110

aat atg cag acc cag gga tgc caa gat cca aac caa gaa gaa cta gac        384
Asn Met Gln Thr Gln Gly Cys Gln Asp Pro Asn Gln Glu Glu Leu Asp
           115                  120                  125

gag cta gaa gaa gaa aca ggg aat gta cag gcc cag gga tgc caa gat        432
Glu Leu Glu Glu Glu Thr Gly Asn Val Gln Ala Gln Gly Cys Gln Asp
     130                  135                  140

cca aac caa gaa gaa cca gag atg cta gag gaa gca gac cac aga aga        480
Pro Asn Gln Glu Glu Pro Glu Met Leu Glu Glu Ala Asp His Arg Arg
145                  150                  155                  160

aaa tac aga gag aac atg aag gct gaa cta ctg gag aca tgg gac aac        528
Lys Tyr Arg Glu Asn Met Lys Ala Glu Leu Leu Glu Thr Trp Asp Asn
               165                  170                  175

atc agt tgg cct aaa gac cac gta tat atc cgt aat aca tca aag gac        576
Ile Ser Trp Pro Lys Asp His Val Tyr Ile Arg Asn Thr Ser Lys Asp
           180                  185                  190

gaa cat gag gaa ctg cag cgc cta ctg gat cct aat agg act aga gcc        624
Glu His Glu Glu Leu Gln Arg Leu Leu Asp Pro Asn Arg Thr Arg Ala
           195                  200                  205
```

Fig. 19A

cag gcc cag acg ata gtc ttg gtg ggg agg gca ggg gtt ggg aag acc   672
Gln Ala Gln Thr Ile Val Leu Val Gly Arg Ala Gly Val Gly Lys Thr
    210   215   220

acc ttg gca atg cgg gct atg ctg cac tgg gca aat gga gtt ctc ttt   720
Thr Leu Ala Met Arg Ala Met Leu His Trp Ala Asn Gly Val Leu Phe
225   230   235   240

cag caa agg ttc tcc tat gtt ttc tat ctc agc tgc cat aaa ata agg   768
Gln Gln Arg Phe Ser Tyr Val Phe Tyr Leu Ser Cys His Lys Ile Arg
            245   250   255

tac atg aag gaa act acc ttt gct gaa ttg att tct ttg gat tgg ccc   816
Tyr Met Lys Glu Thr Thr Phe Ala Glu Leu Ile Ser Leu Asp Trp Pro
        260   265   270

gat ttt gat gcc ccc att gaa gag ttc atg tct caa cca gag aag ctc   864
Asp Phe Asp Ala Pro Ile Glu Glu Phe Met Ser Gln Pro Glu Lys Leu
        275   280   285

ctg ttt att att gat ggc ttt gag gaa ata atc ata tct gag tca cgc   912
Leu Phe Ile Ile Asp Gly Phe Glu Glu Ile Ile Ile Ser Glu Ser Arg
        290   295   300

tct gag agc ttg gat gat ggc tcg cca tgt aca gac tgg tac cag gag   960
Ser Glu Ser Leu Asp Asp Gly Ser Pro Cys Thr Asp Trp Tyr Gln Glu
305   310   315   320

ctc cca gtg acc aaa atc cta cac agc ttg ttg aag aaa gaa ttg gtt   1008
Leu Pro Val Thr Lys Ile Leu His Ser Leu Leu Lys Lys Glu Leu Val
            325   330   335

ccc ctg gct acc tta ctg atc acg atc aag acc tgg ttt gtg aga gat   1056
Pro Leu Ala Thr Leu Leu Ile Thr Ile Lys Thr Trp Phe Val Arg Asp
        340   345   350

ctt aag gcc tca tta gtg aat cca tgc ttt gta caa att aca ggg ttc   1104
Leu Lys Ala Ser Leu Val Asn Pro Cys Phe Val Gln Ile Thr Gly Phe
        355   360   365

aca ggg gac gac cta cgg gta tat ttc atg aga cac ttt gat gac tca   1152
Thr Gly Asp Asp Leu Arg Val Tyr Phe Met Arg His Phe Asp Asp Ser
        370   375   380

agt gaa gtt gag aaa atc ctg cag cag cta aga aaa aac gaa act ctc   1200
Ser Glu Val Glu Lys Ile Leu Gln Gln Leu Arg Lys Asn Glu Thr Leu
385   390   395   400

ttt cat tcc tgc agt gcc ccc atg gtg tgt tgg act gta tgt tcc tgt   1248
Phe His Ser Cys Ser Ala Pro Met Val Cys Trp Thr Val Cys Ser Cys
            405   410   415

Fig. 19B

```
ctg aag cag ccg aag gtg agg tat tac gat ctc cag tca atc act cag     1296
Leu Lys Gln Pro Lys Val Arg Tyr Tyr Asp Leu Gln Ser Ile Thr Gln
            420             425             430

act acc acc agt ctg tat gcc tat ttt ttc tcc aac ttg ttc tcc aca     1344
Thr Thr Thr Ser Leu Tyr Ala Tyr Phe Phe Ser Asn Leu Phe Ser Thr
            435             440             445

gca gag gta gat ttg gca gat gac agc tgg cca gga caa tgg agg gcc     1392
Ala Glu Val Asp Leu Ala Asp Asp Ser Trp Pro Gly Gln Trp Arg Ala
            450             455             460

ctc tgc agc ctg gcc ata gaa ggg ctg tgg tct atg aac ttc aca ttt     1440
Leu Cys Ser Leu Ala Ile Glu Gly Leu Trp Ser Met Asn Phe Thr Phe
465             470             475             480

aac aaa gaa gac act gag att gag ggc ctg gaa gtg cct ttc att gat     1488
Asn Lys Glu Asp Thr Glu Ile Glu Gly Leu Glu Val Pro Phe Ile Asp
            485             490             495

tct ctc tac gag ttc aat att ctt caa aag atc aat gac tgt ggg ggt     1536
Ser Leu Tyr Glu Phe Asn Ile Leu Gln Lys Ile Asn Asp Cys Gly Gly
            500             505             510

tgc act act ttc acc cac cta agt ttc cag gag ttt ttt gca gcc atg     1584
Cys Thr Thr Phe Thr His Leu Ser Phe Gln Glu Phe Phe Ala Ala Met
            515             520             525

tcc ttt gtg cta gag gaa cct aga gaa ttc cct ccc cat tcc aca aag     1632
Ser Phe Val Leu Glu Glu Pro Arg Glu Phe Pro Pro His Ser Thr Lys
            530             535             540

cca caa gag atg aag atg tta ctg caa cac gtc ttg ctt gac aaa gaa     1680
Pro Gln Glu Met Lys Met Leu Leu Gln His Val Leu Leu Asp Lys Glu
545             550             555             560

gcc tac tgg act cca gtg gtt ctg ttc ttc ttt ggt ctt tta aat aaa     1728
Ala Tyr Trp Thr Pro Val Val Leu Phe Phe Phe Gly Leu Leu Asn Lys
            565             570             575

aac ata gca aga gaa ctg gaa gat act ttg cat tgt aaa ata tct ccc     1776
Asn Ile Ala Arg Glu Leu Glu Asp Thr Leu His Cys Lys Ile Ser Pro
            580             585             590

agg gta atg gag gaa tta tta aag tgg gga gaa gag tta ggt aag gct     1824
Arg Val Met Glu Glu Leu Leu Lys Trp Gly Glu Glu Leu Gly Lys Ala
            595             600             605

gaa agt gcc tct ctc caa ttt cac att cta cga ctt ttt cac tgc cta     1872
Glu Ser Ala Ser Leu Gln Phe His Ile Leu Arg Leu Phe His Cys Leu
            610             615             620
```

Fig. 19C

```
cac gag tcc cag gag gaa gac ttc aca aag aag atg ttg ggt cgt atc      1920
His Glu Ser Gln Glu Glu Asp Phe Thr Lys Lys Met Leu Gly Arg Ile
625               630               635                   640

ttt gaa gtt gac ctt aat att ttg gag gac gaa gaa ctc caa gct tct      1968
Phe Glu Val Asp Leu Asn Ile Leu Glu Asp Glu Glu Leu Gln Ala Ser
                645               650                   655

tca ttt tgc cta aag cac tgt aaa agg tta aat aag cta agg ctt tct      2016
Ser Phe Cys Leu Lys His Cys Lys Arg Leu Asn Lys Leu Arg Leu Ser
            660               665                   670

gtt agc agt cac atc ctt gaa agg gac ttg gaa att ctg gag tgc aaa      2064
Val Ser Ser His Ile Leu Glu Arg Asp Leu Glu Ile Leu Glu Cys Lys
            675               680                   685

tcg gta act cct gag tgg gtt ctg cag gac ctc att att gcc ctt cag      2112
Ser Val Thr Pro Glu Trp Val Leu Gln Asp Leu Ile Ile Ala Leu Gln
        690               695               700

ggt aac agc aag ctg acc cat ctg aac ttc agc tct aac aag ctg gga      2160
Gly Asn Ser Lys Leu Thr His Leu Asn Phe Ser Ser Asn Lys Leu Gly
705               710               715                   720

atg act gtc ccc ctg att ctt aaa gct ttg aga cac tca gct tgc aac      2208
Met Thr Val Pro Leu Ile Leu Lys Ala Leu Arg His Ser Ala Cys Asn
                725               730                   735

ctc aag tat ctg tgc ctg gag aaa tgc aac ttg tcg gca gcc agc tgt      2256
Leu Lys Tyr Leu Cys Leu Glu Lys Cys Asn Leu Ser Ala Ala Ser Cys
            740               745               750

cag gac cta gcc ttg ttt ctc acc agc atc caa cac gta act cga ttg      2304
Gln Asp Leu Ala Leu Phe Leu Thr Ser Ile Gln His Val Thr Arg Leu
            755               760               765

tgc ctg gga ttt aat cgg ctc caa gat gat ggc ata aag cta ttg tgt      2352
Cys Leu Gly Phe Asn Arg Leu Gln Asp Asp Gly Ile Lys Leu Leu Cys
        770               775               780

gcg gcc ctg act cac ccc aag tgt gcc tta gag aga ctg gag ctc tgg      2400
Ala Ala Leu Thr His Pro Lys Cys Ala Leu Glu Arg Leu Glu Leu Trp
785               790               795                   800

ttt tgc cag ctg gca gca ccc gct tgc aag cac ttg tca gat gct ctc      2448
Phe Cys Gln Leu Ala Ala Pro Ala Cys Lys His Leu Ser Asp Ala Leu
                805               810                   815

ctg cag aac agg agc ctg aca cac ctg aat ctg agc aag aac agc ctg      2496
Leu Gln Asn Arg Ser Leu Thr His Leu Asn Leu Ser Lys Asn Ser Leu
            820               825               830
```

Fig. 19D

```
aga gac gag gga gtc aag ttc ctg tgt gag gcc ttg ggt cgc cca gat       2544
Arg Asp Glu Gly Val Lys Phe Leu Cys Glu Ala Leu Gly Arg Pro Asp
        835                 840                 845

ggt aac ctg cag agc ctg aat ttg tca ggt tgt tct ttc aca aga gag       2592
Gly Asn Leu Gln Ser Leu Asn Leu Ser Gly Cys Ser Phe Thr Arg Glu
        850                 855                 860

ggc tgt gga gag ctg gct aat gcc ctc agc cat aat cat aat gtg aaa       2640
Gly Cys Gly Glu Leu Ala Asn Ala Leu Ser His Asn His Asn Val Lys
865                 870                 875                 880

atc ttg gat ttg gga gaa aat gat ctt cag gat gat gga gtg aag cta       2688
Ile Leu Asp Leu Gly Glu Asn Asp Leu Gln Asp Asp Gly Val Lys Leu
                885                 890                 895

ctg tgt gag gct ctg aaa cca cat cgt gca ttg cac aca ctt ggg ttg       2736
Leu Cys Glu Ala Leu Lys Pro His Arg Ala Leu His Thr Leu Gly Leu
                900                 905                 910

gcg aaa tgc aat ctg aca act gct tgc tgc cag cat ctc ttc tct gtt       2784
Ala Lys Cys Asn Leu Thr Thr Ala Cys Cys Gln His Leu Phe Ser Val
                915                 920                 925

ctc agc agc agt aag agc ctg gtc aat ctg aac ctt cta ggc aat gaa       2832
Leu Ser Ser Ser Lys Ser Leu Val Asn Leu Asn Leu Leu Gly Asn Glu
        930                 935                 940

ttg gat act gat ggt gtc aag atg cta tcc tct atc ctc gtg tct tta       2880
Leu Asp Thr Asp Gly Val Lys Met Leu Ser Ser Ile Leu Val Ser Leu
945                 950                 955                 960

gat tta gac ccc ttg ttc ttc gag cca ctt ccg gac tgc caa att aga       2928
Asp Leu Asp Pro Leu Phe Phe Glu Pro Leu Pro Asp Cys Gln Ile Arg
                965                 970                 975

ctt cag tta aaa gac ttt agc tcc tgg ccc ccc gtc agc ccc tcc ggt       2976
Leu Gln Leu Lys Asp Phe Ser Ser Trp Pro Pro Val Ser Pro Ser Gly
                980                 985                 990

gat gtg cag gac atg gag gta gaa tgg gac cct gtt tac agg aat aat       3024
Asp Val Gln Asp Met Glu Val Glu Trp Asp Pro Val Tyr Arg Asn Asn
            995                 1000                1005

att cag gtt aat aca aaa cca tcg taa                                   3051
Ile Gln Val Asn Thr Lys Pro Ser  *
    1010                1015
```

Fig. 19E